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FOURTEENTH ANNUAL REPORT

OF

DIVISION OF WATERWAYS

OF

THE DEPARTMENT OF PURCHASES AND CONSTRUCTION

July 1, 1930
TO
June 30, 1931

AUG. 26TH 1818

LOUIS L. EMMERSON, Governor
HENRY H. KOHN, Director
THOMAS WILLIAMSON, Assistant Director

BENJAMIN H. MILLER,
Supervisor of Illinois Waterway Construction

L. D. CORNISH, Chief Engineer

Chicago Office, 220 South State Street

[Reprinted from the Fourteenth Administrative Report. Printed by authority of the State of Illinois.]

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NATURAL HISTORY SURVEY
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WATERWAYS.

Benjamin H. Miller, *Supervisor.*

This is the Fourteenth Annual Report of the Division of Waterways and covers in outline the work of this division from July 1, 1930 to June 30, 1931.

I was appointed Supervisor of Illinois Waterways, January 15, 1931, succeeding Wm. F. Mulvihill.

EXTENT OF JURISDICTION OF THE DIVISION OF WATERWAYS.

The law confers upon the Division of Waterways the powers, duties and jurisdiction formerly exercised by the Rivers and Lakes Commission, with especial reference to its jurisdiction over all rivers and lakes of the State of Illinois, to prevent pollution thereof or encroachments thereon; the powers and duties of the Illinois Waterway Commission with reference to the construction, operation and maintenance of the Illinois Waterway, and for the development and utilization of the water power thereof; and also the powers of the Illinois and Michigan Canal Commissioners for the control and management of the Illinois and Michigan Canal, the maintenance of the navigability thereof and the sale and lease of canal lands and property.

ILLINOIS WATERWAY.

The Act for the completion of the Illinois Waterway by the Federal Government provided that from moneys in the Waterway Fund the State of Illinois should construct the highway bridges at Brandon Road and Marseilles Canal and to make the necessary alterations to other highway bridges across the Illinois Waterway.

Previous to the decision of the Federal Government in 1930 to take over the completion of the Illinois Waterway, the State of Illinois, through the Division of Waterways, had prepared plans for the highway bridges which were to be reconstructed by the State, but after Federal completion was effected the Federal engineers required radical changes in the plans of these highway bridges. This made plans previously prepared practically useless and the State immediately commenced the preparation of new plans in accordance with the requirements of the U. S. engineers. This work of preparing plans and specifications was prosecuted vigorously so that in June, 1931, the State had plans and specifications ready for letting contracts for five bridges over the Illinois Waterway, which are as follows: Jefferson Street Bridge, Joliet, Jackson Street Bridge, Joliet, Van Buren Street Bridge, Joliet, Brandon Road Bridge, south of Joliet, and Marseilles Bridge, the total estimated cost of these bridges being a little over $1,000,000.

In pursuance of these plans the State, through the Department of Purchases and Construction, proceeded to publish, according to law, notice of taking bids at Springfield, Illinois, on August 25, 1931, for the furnishing and erection of the steel work for these bridges.

The engineers of the State are now preparing plans and specifications for the remaining five highway bridges to be constructed by the State over the Illinois Waterway and it is expected that contracts for these bridges can be let in the spring of 1932. These bridges are at Cass, Ruby and McDonough streets, Joliet, Smith's Bridge near Channahon and the LaSalle Street Bridge at Ottawa, Illinois.

There are two other highway bridges to be constructed over the Illinois Waterway—one at Seneca and one at Morris. These are to be built by the Highway Division of the State.

WATERWAY EQUIPMENT SOLD.

When the Federal Government passed the act taking over the Illinois Waterway, construction operations by the State ceased and outstanding contracts were cancelled. As a consequence the State had in its possession a large quantity of equipment and material for which it had no further use. In order to provide additional funds for bridge construction the State advertised this equipment and material for sale and as a result the Congress Construction Company purchased the Dresden Island equipment and material in the amount of $107,401.00 and the Connolly Contracting Company purchased part of the Brandon Road equipment and materials for $42,528.83, all of which money, when received, will be credited to the Waterway Fund.

AMENDMENT TO ILLINOIS WATERWAY ACT AND JOLIET TUNNEL.

When this division proceeded to make plans for the reconstruction of the highway bridges in the city of Joliet it was learned that the water mains of the city of Joliet and the cables, wires and gas mains of the public utility companies serving the city of Joliet were constructed on these bridges in order to serve people on both sides of the DesPlaines River.

Before reconstructing the bridges and removing this utility equipment it was necessary to provide other means for carrying this utility service over the DesPlaines River. This result was accomplished by the construction by the State of an underground tunnel fifty feet below the bed of the DesPlaines River at a cost of approximately $100,000.00. Previous to the construction of this tunnel negotiations were entered into with the Western United Gas & Electric Company, the Public Service Company of Northern Illinois and the Illinois Bell Telephone Company for the purpose of having them contribute toward the cost of the construction of this tunnel, and these negotiations resulted in an agreement whereby each of these utility companies was to pay the State of Illinois $25,000.00 for the use of this tunnel and in addition thereto each of said companies would bear the cost of the removal of its equipment from the bridges to the tunnel.

The Fifty-seventh General Assembly, by Senate Bill No. 11, approved May 7, 1931, amended sections 5, 7 and 27 of the Illinois Waterway Act, approved June 17, 1919, as amended July 6, 1927, and June 27, 1930. The Act was amended so as to authorize the use by public utilities or municipalities of any tunnel constructed as an appurtenance of the Illinois Waterway and to provide that the proceeds of the sale of Illinois Waterway lands and the granting of rights to use any tunnel should be covered into "The Waterway Fund."

The paragraphs amended now read as follows, the amended portion being shown in italics:

Sec. 5—(b). The term "appurtenances" when used with reference to or in connection with the term "The Illinois Waterway" or in connection with the term "waterway", shall comprehend all dams, locks, (including the lock connecting the Sanitary District channel with "The Illinois Waterway,") power plants, docks, dry docks, terminals, landings, walls, dykes, embankments, *tunnels,* basins, pools, laterals, buildings, structures or appliances necessary, convenient or incident to the construction, operation or maintenance of "The Illinois Waterway," *provided the term "appurtenances" as used herein shall not include or apply to any property, real, personal, or mixed, of any existing sanitary district, which has a population of one million or more within its territorial limits.*

Sec. 7. Subject to the conditions and limitations prescribed by this Act, and subject to any conditions and limitations which the Federal government, or the officers thereof, may lawfully impose, the Department of *Purchases and Construction* shall have power:

(15) *To grant the right or privilege to any public utility or municipality to use any tunnel constructed as an appurtenance of the Illinois Waterway for the purpose of placing, operating and maintaining therein conduits, cables, gas mains, water mains and other equipment required in connection therewith upon such terms as may be agreed upon between the Department of Purchases and Construction and such public utility or municipality.*

Sec. 27. The gross or total proceeds, receipts and income arising from the operation, management and maintenance of "The Illinois Waterway" and its appurtenances, including all receipts from the utilization or lease of water power, shall be covered into a special fund in the treasury which shall be known as "The Waterway Maintenance Fund."

(1) The proceeds from the sale of machinery, tools, equipment and other personal property acquired for the construction of "The Illinois Waterway" and no longer needed for that purpose; *the proceeds from the sale or lease of any of the lands or lots acquired for use in the construction of such waterway or in the development of power incident thereto, and no longer needed for the management, use and operation of such waterway or water power, and the proceeds received in consideration of the grant of the right or privilege to any public utility or municipality to use any tunnel constructed as an appurtenance of "The Illinois Waterway" for the purpose of placing, operating and maintaining therein, conduits, cables, gas mains, water mains and other equipment required in connection therewith,* shall be covered into the special fund known as "The Waterway Fund."

(2) *Whereas, Certain municipalities are in urgent need of some means of placing conduits, cables and gas and water mains across or under the Illinois Waterway and the Department of Purchases and Construction should be authorized to grant such rights or privileges immediately, therefore an emergency exists and this Act shall take effect upon its passage.*

Approved May 7, 1931.

Immediately upon the passage of the amendments to the Illinois Waterway Act this department entered into an agreement with the three public utility companies under which they were granted the privilege of using the Joliet Tunnel for the purpose of placing, operating and maintaining their conduits, cables, gas mains and other equipment therein upon the payment into the Waterway Fund of $25,000.00 each, and upon the execution of these agreements the said total sum of $75,000.00 was paid by the public utility companies and has been paid into the State treasury to the credit of the Waterway Fund.

Under this amended Act this department also has the right to grant the city of Joliet the use of said tunnel for its water mains and other public utility purposes.

FOX RIVER REGION.

During the past year the Division of Waterways has made an investigation of the conditions of navigation in the Fox River from Aurora north to the Wisconsin state line, which includes Fox Lake and the Chain of Lakes region in Lake County.

Fox River with its lake region comprises one of the most beautiful water areas to be found in the State of Illinois. The river flows largely through wooded and hilly rolling territory which is difficult to surpass in beauty.

The various communities along the Fox River are awakening to the importance of the stream for recreation purposes. As a result they are doing more and more to remove the sewage load and in this way are working toward a better and cleaner stream than has been had for some years.

The fact that the various communities along the Fox River are taking an interest in its improvement would seem to indicate that the State too might well be interested. In addition to making the stream more nearly navigable, which naturally will make it useful and attractive to the public, the State might well take precautionary means, educational or otherwise, to prevent the recurrence of accidents or careless operations through which several industries have at least temporarily all but exterminated fish life for miles in the river. At best it must require several years to restore fish life to the point where it formerly existed. All factors tending to make the stream more attractive must tend to create a demand for new homes near this river and thus additional revenue for the State.

The territory surrounding the Fox River and Fox Lake has developed rapidly in the past ten years. Not only has the property been subdivided and improved with summer homes by people from Chicago, but with improved transportation this region is now becoming settled with people who are building permanent homes and living there throughout the year. With these developments and improvements, the assessed property valuations have increased from two to five fold in the past fifteen years and as a result thereof the State is receiving a much greater amount in taxes. During this period no money has been expended from State appropriations for the improvement of navigation on the Fox River and Fox Lake outside of certain repairs to the McHenry Dam and the building of a few levees.

The channels in Fox Lake and the adjoining lakes have gradually filled up with weeds and sand and many of these lakes, which were formerly navigable, cannot now be navigated with anything but small rowboats. Property owners have improved their shore lines but are unable to use the lakes and river for motor boats on account of the channels being obstructed with weeds and earth.

The Fox River from Aurora north to McHenry in many places is not navigable and as a result the river cannot be used to full advantage by property owners. The improvement of navigation in Fox River and Fox Lake would bring a continued influx of people to this territory with a further enhancement in assessment valuations and taxes for the benefit of the State.

Fox Lake contains the only bed of lotus flowers in this country. This covers a large area and is famous throughout the world. Thousands of people visit these lotus beds every year.

Grass Lake, Lake County. Lotus beds—only place where found in America.

The Division of Waterways is continuing its investigation and survey for the purpose of preparing a comprehensive plan for the improvement of navigation in the river and lakes of this region, which is rapidly becoming the play ground of Chicago.

Attention is called to an article in this report on the Fox River and its use, by W. G. Potter, Drainage Engineer.

ENGINEERING REPORT.

By L. D. Cornish, *Chief Engineer.*

July 1, 1930 to June 30, 1931.

THE ILLINOIS WATERWAY.

During the last six months of the preceding fiscal year every possible effort was made to reduce all construction work and expenditures on account of the necessity of curtailing expenditures from the Illinois Waterway Fund pending the receipt of Federal aid for the completion of the waterway.

FEDERAL COMPLETION OF WATERWAY.

The River and Harbor Act of 1930 (reprinted p. 9, 13th Annual Report) became a law by the signature of the President on July 5, 1930. This Act adopted and authorized the Illinois Waterway as a Federal project, and authorized an appropriation of $7,500,000 for its completion subject to provisions of the Chief of Engineer's Report in Senate Document 126, 71st Congress, second session, referred to and made a part of the Act. The provisions of the Chief of Engineer's report directed at the State of Illinois are:

> "(b) That the State of Illinois shall proceed, subject to the supervision and approval of all expenditures and obligations by the Secretary of War, to construct the highway bridges at the Brandon Road and Marseilles Canal, to make the necessary alterations in other highway bridges across the Illinois Waterway, to make the necessary arrangements and agreements for the alterations of the railroad bridges across said waterway, and to do such other work on said waterway as the Secretary of War shall direct and the available funds of the State make possible; the bridges mentioned not to become the property of the United States, and no obligations to be incurred by the United States to maintain, operate or replace them.
>
> "(c) That no claim shall lie against the United States because of any contractual obligations which have been or may be entered into by the State of Illinois as regards the construction of a waterway between Utica and Lake Michigan."

The Appropriation Act of the 71st Congress, 2nd Session, became a law prior to passage of the River and Harbor Act, consequently no federal funds were available on July 5, and the State was compelled to continue the maintenance of the waterway structures and equipment at considerable expense, and the further accumulation of damage claims on existing uncancellable contracts.

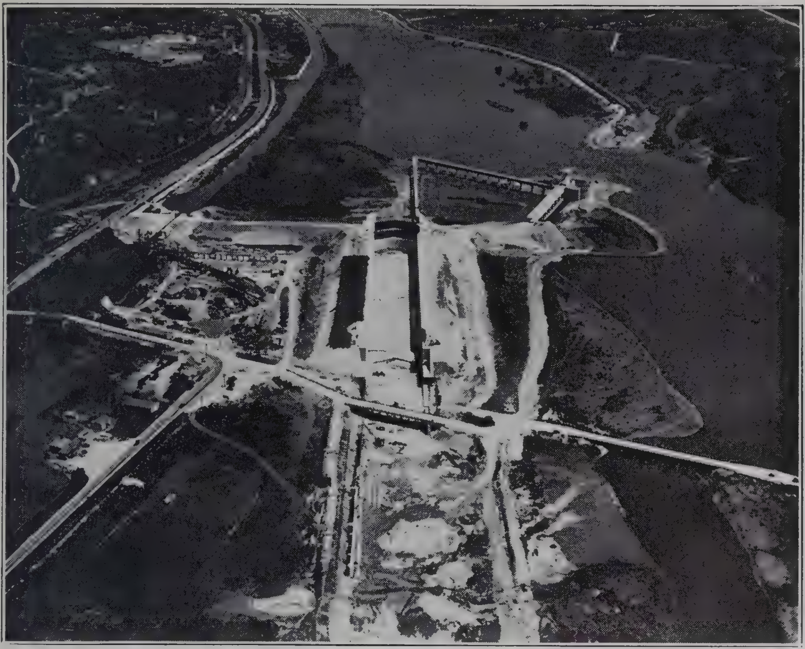
Federal funds for this waterway were eventually provided for by the Army Appropriation Act of February 23, 1931.

The local U. S. District Engineer, Col. W. C. Weeks, promptly advertised for bids, and a contract authorized April 1, 1931, was awarded to the Congress Construction Company of Chicago for the completion of the Dresden Island Lock and Dam, and a contract authorized March 16, 1931 to the Connolly Contracting Company of St. Paul for completion of the Brandon Road Lock and Dam. Bids were also received on May 4 for metal work and June 15 for machinery, which involved respectively the completion of the work covered by State Contracts 10 and 8. The State contractor, Independent Bridge Company of Pittsburg, was the low bidder and the work was awarded to them under contracts authorized June 30, 1931 and August 6, 1931, respectively. This insured the use of the State contract material on hand and paved the way for the final settlement of the State contracts at a minimum of cost to the State.

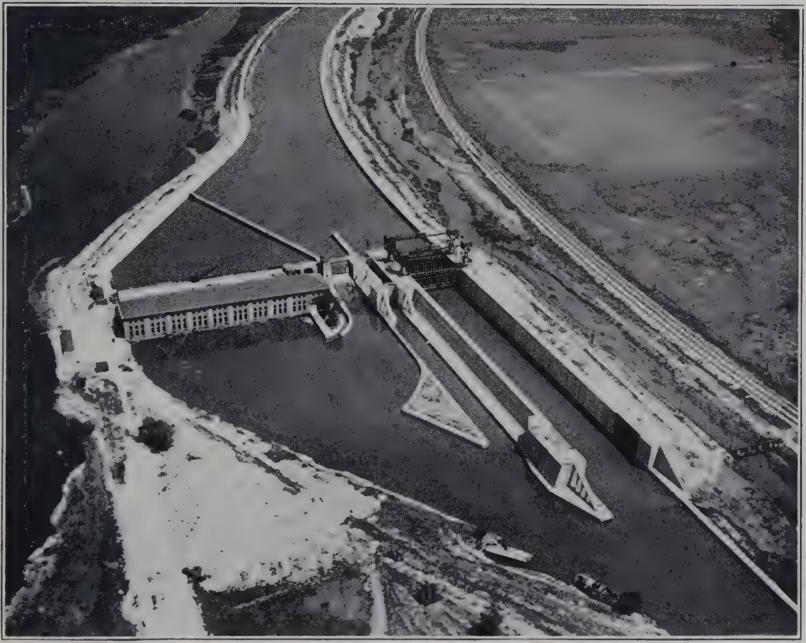
By June 30, 1931, Federal completion of the Dresden Island and Brandon Road Locks and Dams was well under way and the Federal construction program contemplates the completion of all waterway construction by April 1, 1933.

SETTLEMENT OF CONTRACTUAL OBLIGATIONS.

On July 5, 1930, the personal service contracts for the construction of the Dresden Island and Brandon Road Locks and Dams became legally terminated, in accordance with a 30-day formal notice served on



Aeroplane view of Brandon Road lock and dam located two miles below Joliet. Showing status on June 30, 1931. Lift 31 feet.—*Photo by Chicago Aerial Survey Co.*



Aeroplane view of Lockport Lock connecting Chicago Sanitary and Ship Canal with the DesPlaines River. Lift of 41 feet. On left is shown the Sanitary District power house and the original lock.—*Photo by Chicago Aerial Survey Co.*

the contractors June 4, 1930. Final payments on these contracts were made February 16, 1931, and March 11, 1931, respectively.

Four non-cancellable contracts were in force, the settlement of which involved claims and damages. Final settlement on Contract No. 2 with the Woods Bros. Construction Company for the construction of the Starved Rock Lock and Dam was made on January 3, 1931, and on Contract 9 A, C, D, with the Congress Construction Company for pool dredging on January 3, 1931. Contracts 8 and 10 with the Independent Bridge Company of Pittsburg for the furnishing and erection of the machinery, lock gates, etc., were not terminated during the fiscal year owing to the vast quantity of fabricated metal work which had been delivered. While the contracts provided for the erection of this material, actual erection was impossible because of the State having ceased the construction of concrete work at Dresden Island and Brandon Road Locks and Dams.

DISPOSAL OF WATERWAY CONSTRUCTION EQUIPMENT.

When construction operations officially ceased on July 5, 1930, the State was possessed of a large quantity of equipment and materials, for which there was no further State use. The shortage of waterway funds for bridge construction obligations made it necessary to dispose of this equipment to the best advantage, the proceeds to be credited to the Waterway Fund.

It was obvious that the best customer would be the Federal contractor who completed the work where the equipment was located, and the Federal engineers were requested to let their contracts contingent upon the contractor purchasing the State equipment at a fair fixed price. The War Department rejected this proposal but agreed to list the equipment and provide in their contracts for its optional purchase by the contractor at an appraised valuation.

An appraiser, Mr. Edward L. Callahan, was appointed by the U. S. District Engineer, and Mr. George J. Kable by the Director of this department. These gentlemen made a joint appraisal of all items which may be summarized as follows:

Dresden Island, equipment and materials	$113,077.12
Brandon Road and Joliet, equipment and materials	123,864.83
Dredging equipment (floating plant)	163,730.80
	$400,672.75

As Federal contractors, the Congress Construction Company, purchased the Dresden Island equipment and materials to the amount of $107,401.00, and the Connolly Contracting Company part of the Brandon Road equipment to the amount of $42,528.83.

The maintenance and sale of this State equipment and materials was placed by the writer in the charge of Mr. John H. Walker, Assistant to the Chief Engineer, and further particulars may be found in his report on page 31.

STATUS OF WATERWAY STRUCTURES FOR FEDERAL COMPLETION.

STARVED ROCK LOCK AND DAM.

The metal work of the lock gates, valves and Taintor gates of the dam and the operating machinery was completed, tested and accepted from the contractors. The lock and dam, as a whole, was ready to be turned over to the Federal engineers in a completed condition except for lighting fixtures and buildings. An aero-photograph of the structures, as completed by the State, is shown on page 38 of the 13th Annual Report.

MARSEILLES LOCK AND CANAL.

The masonry work, lock gates and valves, and also the canal, except for its connection with the river were completed in the preceding fiscal year. The installation of the operating machinery was completed, thus leaving only the lighting and buildings for erection by the United States. An aero-photograph is shown on page 37 of the 13th Annual Report.

DRESDEN ISLAND LOCK AND DAM.

No construction work was done by the State on this project during the fiscal year, and the status when the War Department took over the work is shown by the aero-photograph on page 35 of the 13th Annual Report. Construction work was resumed by Federal contractors in Februray, 1931, and the areo-photograph on page 31 shows the status of the work as of June 30, 1931.

BRANDON ROAD LOCK AND DAM.

The State installed part of the machinery but did no other work during the fiscal year. The Federal contractors resumed construction in March, 1931. The status at the time of cessation of State work is shown by the aero-photograph on page 34 of the 13th Annual Report, and on June 30, 1931 on page 11 of this report.

JOLIET RETAINING WALLS.

Neither the State nor Federal Government did any work on this project during the fiscal year.

LOCKPORT LOCK.

This lock was 97 per cent completed in 1929. Federal completion involves only lighting equipment and buildings. See photo on page 11.

The State, by contract, had prepared in 1929 plans for five movable bridges in Joliet which had to be discarded because of the demand of the War Department for higher vertical clearances.

HIGHWAY BRIDGES.

New bridge plans were completed during the fiscal year to such an extent that a construction contract for the Van Buren Street Bridge, Joliet, was advertised on May 29 for opening of bids July 7, 1931, and bids will be requested by advertisement in July for the immediate construction of the Jefferson and Jackson Street Bridges, Joliet, the Brandon Road Bridge, Will County, and Marseilles Canal Bridge in LaSalle County.

EXPENDITURES FROM ILLINOIS WATERWAY CONSTRUCTION FUND AS VOUCHERED BY DIVISION OF WATERWAYS FROM JULY 1, 1930 TO JUNE 30, 1931.

Item.	Description.	July.	August.	September.	October.	November.	December.	January.	February.
Contract No. 2	Starved Rock							$100,000 00	
Project No. 3	Dresden Island	$ 6,749 96	$ 5,836 76	$4,535 07	$ 3,671 26	$ 3,217 74	$3,682 50	219 86	$63,949 43
Project No. 5 and 6	Joliet Works	7,836 89	5,836 77	4,535 07	12,927 26	3,217 74	3,521 55	360 47	380 23
Contract No. 7	Gates—Starved Rock	58,781 70							
Contract No. 8	Machinery	62,699 45				181,987 10			
Contract No. 9A	Pool dredging	36,702 00	51,720 00					56,044 16	
Contract No. 10	Gates, etc	10,625 69				73,940 78			
	Illinois Waterway Bridges					*400,000 00	†8,599 14		8,300 00
	Total structures	$183,395 69	$63,393 53	$9,070 14	$16,598 52	$262,363 36	$15,803 19	$156,624 49	$72,629 66
	Land, etc							978 00	
	Eng. payrolls	2,125 00	2,125 00	2,125 00	2,125 00	2,125 00	1,750 00	2,375 00	2,600 00
	Office expense	692 93	171 11	158 53	209 20	159 08	137 21	125 59	150 27
	Miscellaneous expense	28 32	99 27	768 49	315 95	147 57	278 50	138 71	131 37
	Equipment and supplies						52 13	1,665 33	68 41
	Travel expense	294 63	325 43	561 77	348 55	340 73	247 19	98 12	172 01
	Total for month	$186,536 57	$66,114 34	$12,683 93	$19,597 22	$265,135 71	$18,268 22	$162,005 24	$75,751 72

EXPENDITURES FROM ILLINOIS WATERWAY CONSTRUCTION FUND AS VOUCHERED BY DIVISION OF WATERWAYS FROM JULY 1, 1930 TO JUNE 30, 1931—Concluded.

Item.	Description.	March.	April.	May.	June.	Total.	Remarks
Contract No. 2	Starved Rock	$10,000 00				$110,000 00	Completed.
Project No. 3	Dresden Island	261 14	$85 84			92,209 56	Completed.
Project No. 5 and 6	Joliet Works	37,980 38				76,596 36	Completed.
Contract No. 7	Gates—Starved Rock					58,781 70	Completed.
Contract No. 8	Machinery					244,686 55	
Contract No. 9A	Pool dredging				$ 600 00	145,066 16	Completed.
Contract No. 10	Gates, etc					84,566 47	
	Illinois Waterway Bridges				4,432 44	21,331 58	* Rock Island R. R. Bridge. This voucher not paid. † Audit.
	Total structures	$48,241 52	$ 85 84		$5,032 44	$833,238 38	
	Land, etc					978 00	
	Eng. payrolls	2,712 00	2,750 00	2,675 00	3,515 82	29,002 82	
	Office expense	166 51	307 38	210 62	109 56	2,597 99	
	Miscellaneous expense	83 91	80 80	162 58	101 05	2,336 52	
	Equipment and supplies	85 87	333 74	103 09	108 80	2,417 37	
	Travel expense	14 33	113 05	146 27	166 35	2,828 43	
	Total for month	$51,304 14	$3,670 81	$3,297 56	$9,034 02	$873,399 48	

For a detail report of Waterway and Bridge construction accomplishments during the fiscal year, see the reports of Walter M. Smith, Assistant Chief Engineer, and Gunni Jeppesen, Bridge Engineer, elsewhere in this volume.

PROGRESS SHOWN BY EXPENDITURES.

Presented on page 14 is a tabulation which shows for each month of the fiscal year the expenditures from the Waterway Fund for each contract and other distributed principal items of cost.

WATERWAY BARGE TERMINALS.

In the 12th Annual Report on pages 23-27 may be found a description and picture of the terminal acquired by the State at the juncture of the Chicago Drainage and Ship Canal with the Chicago River, and on pages 169 to 173 the preliminary plans for the improvement of the property.

During this fiscal year the city of Peoria brought to completion a modern barge terminal and the Inland Waterways Corporation of the United States by authority of the Congress has extended its barge line operations up the Illinois River to Peoria and operate through a lease the Peoria Terminal. An illustrated complete description of this terminal by Jacob A. Harman, its designer, and Supervising Engineer, may be found elsewhere in this volume.

CONSTRUCTION FOR RELIEF FROM FLOOD DAMAGE.

The Flood Relief Acts of the 56th General Assembly were not emergency measures, and hence construction work was not commenced until each project had been properly investigated and suitable economical plans had been developed. For this reason only about 18 per cent of the work was placed under contract in the preceding fiscal year. Most of the State work on the Illinois River is in cooperation with the Federal government whereby the State pays one-third and the United States two-thirds of the cost. Federal funds for Illinois River work were limited during the fiscal year, hence a large part of this work could not be placed under contract until after July 1, 1931.

SUMMARY OF EXPENDITURES.

Appropriations for Flood Relief, 56th G. A.	$1,849,229.47
Expended during fiscal year 1929-30	136,796.99
Balance available July 1, 1930	$1,712,432.48
Expended July 1, 1930 to June 30, 1931	792,497.58
Balance available for re-appropriation July 1, 1931	$ 919,934.90

Flood relief work continued in charge of Mr. L. C. Craig, Division Engineer, with headquarters at the Chicago office. The Beardstown field office was continued and a field office opened at Harrisburg. The annual report of Mr. Craig may be found elsewhere in this volume.

POLLUTION—ENCROACHMENTS.

The reports of W. G. Potter, Drainage Engineer, and M. C. Sjoblom, Sanitary Engineer, elsewhere in this volume, cover the activities of the Division of Waterways in these matters.

REPORT OF THE DESIGNING SECTION.

By Walter M. Smith, *Assistant Chief Engineer.*

CONTRACT NO. 7—STARVED ROCK METAL WORK.

Tests of the Taintor gates at Starved Rock dam were made and came out very satisfactorily. In making the tests a compressed air motor was used with a portable connection held in position at each operating shaft by hand power. This was not thoroughly satisfactory but as there have been no electric motors provided as yet and as there was no electric current available, it was the only way a power test of the machinery could be made.

All the gates were opened and closed and there was a considerable variation in the time required to operate the various gates, the time varying from 12 to 28 minutes. This was apparently due to binding of the vertical sides of the gates against the wooden bearing strips in the sides of the piers. Some of these bearing strips had bent and warped very badly as they had been in position for a long time. When this was the case the strips were adzed off to a smooth face. The trouble was also partly due to slight inaccuracy in building the piers, which is unavoidable. Practically all of this trouble was eliminated by the adjustment provided for the end sealing strips in the gates. It was found necessary to elongate the holes provided in these plates to a little greater extent in one of the plates.

All the metal work furnished and erected under this contract was thoroughly satisfactory in all particulars.

Upon the completion of these tests the contract was declared completed and the work was accepted.

CONTRACT NO. 8—GATE AND VALVE OPERATING MACHINERY.

The installation of the machinery at Marseilles and Starved Rock locks was completed and tested under this contract.

As no electric power was available at either of these sites, power was obtained by using a portable generator run by a gasoline tractor engine. This equipment, although giving some trouble, served the purpose satisfactorily except that the voltage of the power furnished varied considerably and thus caused more variation in time of opening and closing valves and gates than would be required with steady power.

Each gate leaf at each site was swung through 50 complete cycles—a cycle consisting of the opening and closing of a gate—without stopping. All of the gates operated in much less time than called for in the specifications. There was no heating up of the bearings and the movement was very smooth.

The lower gates at both locks were operated under service conditions but the upper ones were not as the waterway is not yet completed.

The valves could not be operated under service conditions for the same reasons. All of them were tested and worked very satisfactorily except that it took a slightly greater amount of time to operate them than called for. When the method of power supply and the variation in voltage, also the stiffness in the machinery and valve rollers is taken into account, the tests were considered satisfactory.

The machinery was accepted at these two locks but it was decided to leave the installation at Brandon Road and Dresden Island locks to the U. S. War Department which is to complete the locks and dams.

ELECTRIC LIGHTING, POWER AND SIGNALING SYSTEMS.

Work was continued on the design of the lighting and signaling systems for all the locks until the work was turned over to the U. S. War Department on February 1, 1931.

RAILROAD BRIDGES.

The Chicago, Rock Island and Pacific Railroad has reconstructed its bridge across the waterway in Joliet, keeping the bridge open to traffic during construction. The bridge was about 95 per cent completed.

Damage claims by property owners who were damaged by the raising of this bridge and tracks were submitted to the department, and referred to this office for investigation and report. The claims were investigated and a report made on each.

HIGHWAY BRIDGES.

MOVABLE BRIDGES.

It is necessary to construct some type of movable bridge across the waterway in the city of Joliet and at Brandon Road, as it is impracticable to build a bridge at a sufficient elevation to possibly be a fixed bridge. As certain engineering firms make a specialty of various types of movable bridges, it was believed that it would be more economical to invite certain selected firms to submit designs and estimates of cost of various types of bridges for these sites with a view of selecting the best and most economical design and have the firm submitting such design do the designing work, being paid 5 per cent of the cost of the structure for their work.

The following firms were selected for the competition:

Mr. Ralph Modjeski, 310 S. Michigan Ave., Chicago, Ill.
Scherzer Rolling Lift Bridge Co., 53 W. Jackson Blvd., Chicago, Ill.
Messrs. Keller and Harrington, 205 W. Wacker Drive, Chicago, Ill.
Strauss Engineering Corp., 307 N. Michigan Ave., Chicago, Ill.
Messrs. Harrington & Cortelyou, 1004 Baltimore Ave., Kansas City, Mo.

All these firms submitted designs and estimates of cost except the Strauss Corporation. Designs were submitted for rolling lift bascule, trunnion bascule and vertical lift bridges.

The designs and estimates were checked and passed upon by a board of consulting engineers consisting of Hugh E. Young, Engineer of the Chicago Plan Commission, Frank T. Sheets, Chief Highway Engineer, State of Illinois, and C. C. Westfall, Engineer of Bridges, Illinois Central Railroad System.

This board selected the rolling lift design submitted by the Scherzer Company as being most satisfactory of the designs submitted, but stated that they did not approve of any of the designs submitted. They stated that they preferred the deck type trunnion bascule bridge with the counterweight below the floor level. It was possible to adopt this type of bridge at Brandon Road and this was done, but the large pier structures containing the counterweight pits would decrease the waterway opening under the bridges through Joliet so greatly that it would be very inadvisable to construct this type of bridge. The Scherzer Company was, therefore, engaged to design their type of bridge with overhead counterweights for the Ruby, Jackson, Cass, Jefferson and McDonough Street locations.

Messrs. Harrington and Cortelyou were engaged to design a trunnion bascule bridge with the counterweight beneath the floor for Brandon Road.

TEMPORARY BRIDGE AT VAN BUREN STREET, JOLIET.

The city of Joliet required a temporary bridge to be built at Van Buren Street, Joliet, and that it must be finished and the street car tracks finished across it before any work could be started dismantling any of the other bridges.

A design of a wooden bridge was prepared for this site, approval obtained from the U. S. War Department and the city of Joliet and the contract was advertised on the 29th of May, bids to be opened at Springfield on July 7, 1931.

RUBY STREET BRIDGE, JOLIET.

An amended application to the U. S. War Department for a permit for the construction of this bridge was made on January 12 and approval obtained on February 20, 1931. On account of a bill pending in the legislature—since passed—giving the Department of Public Works and Buildings the authority to widen streets and bridges in cities when they are on main highways, and as Ruby Street bridge is on a main highway and the Chief Highway Engineer informed this office that the width and exact location of this bridge might be changed, nothing has yet been done on the design or construction of this bridge.

JACKSON STREET BRIDGE, JOLIET.

An amended application to the U. S. War Department for a permit for the construction of this bridge was made on January 12, and approval obtained on February 19, 1931.

Contract drawings for the superstructure of this bridge were prepared by the Scherzer Rolling Lift Bridge Company, specifications were prepared by this office and approval of the city of Joliet obtained.

Several studies of the approaches and substructure have been made.

CASS STREET BRIDGE, JOLIET.

An amended application to the U. S. War Department for a permit for the construction of this bridge was made on January 16, and approval obtained on April 25, 1931.

This bridge is on a main highway and as no decision as to its width has yet been made by the Chief Highway Engineer, work on the design has not yet been started.

JEFFERSON STREET BRIDGE, JOLIET.

An application for a permit for construction of this bridge was originally approved on November 26, 1929. This permit, however, was for a bridge with 9 feet clearance. As construction could not be started in the time set by the War Department, the permit expired on November 26, 1930, and a renewal of the permit was refused. An amended application for a permit for a bridge with 16½ feet clearance was sent in on March 25 and approved on April 27, 1931.

Contract drawings for the superstructure of this bridge have been made by the Scherzer Rolling Lift Bridge Company, specifications prepared by this office and approval of the city of Joliet obtained.

The damage caused by constructing this and the other Joliet bridges with a clearance of 16½ feet instead of the much smaller clearance originally planned is greatly increased, and a careful survey was made to ascertain the increased amount of damages.

MCDONOUGH STREET BRIDGE.

It is claimed by the Illinois Traction, Inc., which operates an interurban railway line across this bridge, that a means of operating their cars across the river will have to be provided during the construction of this bridge before dismantling of the present bridge can be started. They also demand that the new bridge be constructed for the operation of 100 ton cars across it.

Copies of all ordinances of the City Council of Joliet bearing on the franchises of all of the street railway companies in Joliet have been obtained and submitted to the Attorney General for an opinion.

A revised application for a permit for the construction of this bridge was sent to the U. S. War Department on January 12 and approved on February 20, 1931. Since then the War Department has requested the lengthening of this bridge about 60 linear feet so that the section of retaining wall left out at this bridge on the east side of the river may be constructed on a straight line between the ends of the wall to the north and south of the street. This will necessitate a new application for a permit.

BRANDON ROAD BRIDGE.

An application for a permit from the U. S. War Department for the construction of this bridge was approved on March 31, 1930, but construction could not be started in the year from the date of the permit as requested so an application was made for a renewal of the permit on February 11 and approved on March 26, 1931.

Drawings for this bridge, both sub and superstructure, were finished by Harrington and Cortelyou of Kansas City, Mo., and specifications prepared by this office for printing.

SMITH'S BRIDGE.

At present there is a bridge across the DesPlaines River at Treats Island about 3 miles east of Channahon and another, known as Smith's Bridge, about 1 mile east of Channahon.

A proposal was made by the road supervisor of Will County to move the latter bridge a short distance upstream, placing it on a section line across the river along which the State is to construct a new highway. He also requested that the bridge be built considerably wider than the present bridge. He was informed that the only way to do this was to have the county abandon the Treats Island bridge and use the money that would be then saved to reconstruct Smith's bridge in the new location with a considerably greater width. After several conferences this was agreed to by the county and township officials. The bridge if built on the section line would make an angle of about 60° with the center line of the stream, and this was objected to by the U. S. War Department. Therefore, an agreement has been attempted on a line at almost a 90° angle with the stream. An agreement has not yet been reached and no work has been done on the design.

This bridge will be a fixed bridge of one long and two short spans and a steel viaduct at each end of the bridge for some distance.

MARSEILLES BRIDGE.

It was originally intended to have a vertical lift movable bridge at this site but on account of the U. S. War Department increasing the vertical clearance demanded for movable bridges when closed from 16½ to 30 feet and reducing the vertical clearance required for fixed bridges to 47 feet it became much more economical to construct a fixed bridge. Therefore, an application for a permit to construct a fixed bridge was made to the U. S. War Department on August 5, 1930. This application was disapproved on August 7, objection being made to the length of opening. A revision was made increasing the length of clear opening to 225 feet and a new application for permit made on August 11. This application was later amended in form and resubmitted on March 28, 1931, and approved on April 27, 1931.

Plans and specifications were prepared by this office for the superstructure, the contract for which will be advertised in a few days.

Plans and specifications for the substructure have been about 90 per cent completed.

OTTAWA BRIDGE.

No work has been done on this bridge during the year except borings at the site.

BORINGS AT BRIDGE SITES.

Efforts were made to contract for necessary exploration borings at Smith's, Marseilles and Ottawa bridge sites, but no firm would bid on the limited information that could be given them about conditions, so a shot drilling machine was purchased and borings made at the site of Smith's bridge and Ottawa bridge by hired labor.

The borings at Smith's bridge site were in most cases very difficult as there is a layer of sand, gravel and boulders between 25 and 30 feet thick overlying a considerable portion of the site. In the first hole bored the casing was lost as it was found impossible to pull it and there was much time lost in pulling casings. There were 18 holes with a total depth of 509 feet bored at this site. All holes penerated several feet into rock.

At the Ottawa bridge five holes were bored for a total depth of 200 feet. All the holes penetrated rock for a distance of from 20 to 40 feet. The rock at this site is a soft sandstone and is a satisfactory foundation material when not subject to heavy erosion.

ILLINOIS AND MICHIGAN CANAL.

CHESTNUT STREET BRIDGE, OTTAWA.

Work on the erection of this bridge was started in July and finished in October, 1930. All work was done in a thoroughly satisfactory manner and makes a very creditable appearance.

SENECA BRIDGE.

Trouble was experienced at Seneca in operating the rolling lift bascule bridge erected across the Illinois and Michigan Canal in Seneca by this department in 1924. It is a single leaf bridge rolling on an abutment on the south side of the canal. Due to unequal settlement the north abutment tilted slightly toward the canal, causing the lower chords and stringers of the bridge to touch the face of the masonry, causing difficulty in operation. The trouble was remedied by cutting off a small amount from the ends of the lower chords and stringers with an acetylene torch.

MISCELLANEOUS.

FARM CREEK DIVERSION CHANNEL, EAST PEORIA.

The Farm Creek Diversion Channel and bridge were completed in January, 1931.

McHenry Lock, McHenry.

Complaint was received of the valve operating machinery at the lock at McHenry. Upon inspection it was found that when the upper pool at this dam was raised about two and one-half feet by reconstruction of the dam about three years ago, the valve operating machinery was not altered to conform to the increased head and it has been exceedingly difficult to operate since then. A new machine for each of the valves was designed but they have not yet been installed.

BRIDGES.

By Gunni Jeppesen, *Bridge Engineer.*

GENERAL OUTLINE.

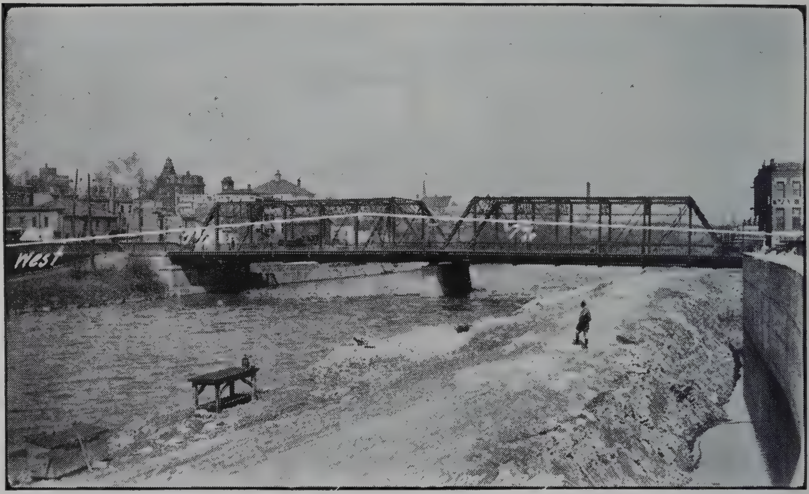
The Illinois Waterway bridge program comprises the following structures:

Ruby Street Bridge.
Jackson Street Bridge.
Cass Street Bridge.
Van Buren Street Bridge, (temporary bridge).
Jefferson Street Bridge, and McDonough Street Bridge, all in the city of Joliet.
Brandon Road Bridge, at the lower entrance to the Brandon Road lock.
Smith's Highway Bridge, near Channahon, Will County.
Marseilles Canal Bridge, at Marseilles, LaSalle County.
LaSalle Street Bridge, Ottawa.

The Ruby Street bridge is near the upper end of the waterway while the others follow in order downstream.

These bridges will vary greatly, both in size and type due to differences in local conditions and traffic needs, and different requirements as to navigation clearances.

In all cases the roadway must be raised as compared with that of the present structure due to the higher water levels created by the canalization of the DesPlaines and Illinois rivers, and the requirements of navigation. In some cases, however, it was found most economical (considering both first cost and cost of up-keep) to build a high level fixed bridge while in others a movable span is provided for the passage of river craft, the roadway being raised only sufficiently to allow tugs and launches to pass under the bridge in its closed position. In some cases the new water level is above the roadway of the existing bridge. This is true, for instance, of the McDonough Street bridge in Joliet, where the new pool level will be more than 20 feet above the normal stage of the river at the present time. The relation between the present and future roadway levels of the Jefferson Street bridge in Joliet is shown in the accompanying photograph on which the new roadway is indicated by a white line.



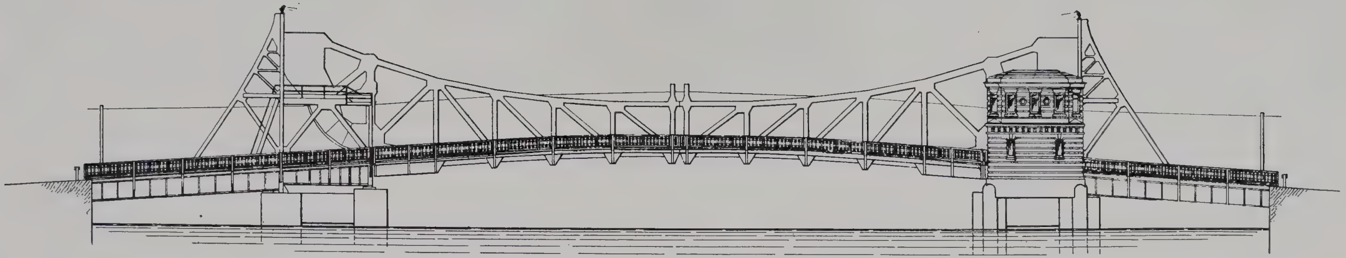
Jefferson Street Bridge, Joliet. The white line indicates the roadway of the new bridge to be built.

JOLIET BRIDGES.

The Van Buren Street bridge is a temporary structure and is for the purpose of relieving traffic while one or more of the permanent bridges are being reconstructed and, therefore, are out of service. It is designed as a wooden trestle with concrete footings but alternative designs submitted by the bidders will be given consideration.

The five permanent bridges in the city of Joliet are all of the same general type. (See Plates 1 and 2.) They vary as to width of roadway and sidewalks, and some carry street car tracks while others do not, but each bridge consists of a double leaf, rolling lift bridge of the Scherzer

PLATE 1



Jefferson Street Bridge, Joliet, Illinois.

Division of Waterways, State of Illinois.

type, and, in addition, of two or more short deck plate girder approach spans. The movable span provides a clear channel for navigation 150 feet wide. It has two symmetrical leaves of semi-through truss construction and each leaf is balanced by means of a monolithic concrete counterweight which connects the tail ends of the two main trusses and which extends above and across the roadway.

In opening, the moving leaf "rolls" back on a pair of heavy box girders so that the leaf recedes from the channel as it opens.

The under-side of the movable span will be 16½ feet above water level. This will permit tugs and launches to pass under the bridge in its closed position and, consequently it will have to be opened only to accommodate the larger vessels. This will materially reduce the number of bridge openings and the interruption to street traffic incidental thereto.

The stationary approach spans will have concrete floors while the movable spans, in order to reduce their weight, will be paved with asphalt planking supported on a floor of treated timber.

The two leaves of the movable span will be controlled by a single operator from an operator's house of substantial construction and pleasing appearance, which will contain the most up-to-date machinery and apparatus for the safe and rapid operation of the bridge. The machinery will be motor driven with provision for operation by hand in case of emergency.

The bridges will be equipped with safety gates and electrically operated traffic signals, which will be interlocked with the operating machinery of the bridge so that the bridge cannot be opened until the gates have been closed and the signals set at "Stop", nor can the gates be raised and the signals cleared until the bridge has again been closed and locked in position.

Electric current for the operation of the movable leaf which is on the opposite side of the channel from the operator's house will be carried across the river by means of two temporary overhead cables. These cables will be replaced by submarine cables when the waterway has been completed or when so ordered by the War Department.

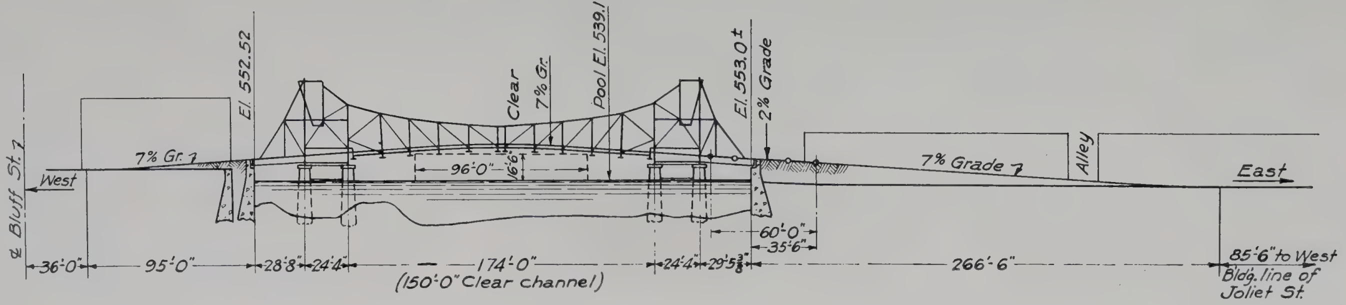
The substructure, that is, the piers and abutments, will be of concrete construction carried to rock.

BRANDON ROAD BRIDGE.

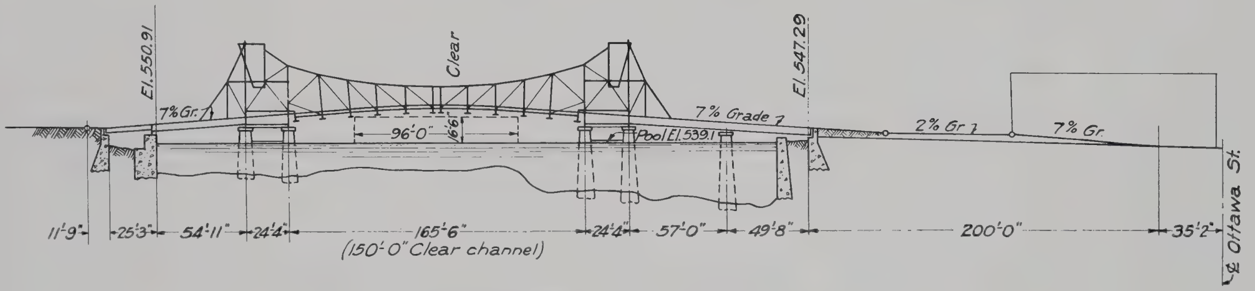
The Brandon Road bridge crosses the downstream approach to the Brandon Road Lock. The distance face to face of approach walls is 110 feet but the bridge is at an angle of 64 degrees with the center line of the channel which necessitates a span of considerably greater length. (151 feet from center to center of trunnions.)

The Brandon Road bridge is a double leaf, trunnion bascule bridge of the deck girder type. (See Plate 3.) The moving leaves rotate about heavy axles, or trunnions, but do not roll, or recede, as do the moving leaves of the Scherzer type bridges in Joliet. The leaves are balanced by means of concrete counterweights which are below the roadway and which, when the bridge opens, descend into watertight, reinforced concrete pits. The mechanical and electrical equipment will be similar to what has been described for the Joliet bridges.

PLATE 2



Cass Street Bridge, Joliet, Illinois.



Jackson Street Bridge, Joliet, Illinois.

SMITH'S HIGHWAY AND OTTAWA BRIDGES.

The two bridges at Smith's Highway and in the city of Ottawa will each have a central truss span about 360 feet long and providing a headroom, or vertical clearance, under the bridge of 47 feet. The main span will be connected with shore by means of shorter truss spans, viaduct structures and embankments. The piers will be of concrete and will be of the dumb-bell type.

MARSEILLES CANAL BRIDGE.

The Marseilles Canal Bridge crosses the Marseilles Canal near Marseilles. At this point there is a distance of only about 85 feet between the south bank of the Illinois River and the north bank of the canal.

There is now an old wagon bridge across the river, leading south from the city of Marseilles. The roadway of this bridge is at Elevation 493 (M. T. N. Y.), while the roadway of the canal bridge must be at Elevation 533.35, or forty feet above that of the river bridge, in order to provide sufficient headroom for navigation. It being impossible to rise forty feet in the short distance of 85 feet, an unusual layout was decided upon.

The canal bridge was located some 160 feet east of, or upstream from, the river bridge, and the two were connected by means of a spiral roadway, partly cut into the existing spoil bank, and partly supported on a wooden trestle. (See Plate 4.) This made the traveled distance between the two bridges almost 1,000 feet and permitted the use of a maximum grade of 7 per cent.

This arrangement, however, is temporary only. When the river bridge is to be rebuilt it will be built in line with the canal bridge and the concrete road south thereof while at the same time connecting with the main business street of the city of Marseilles at the same point as does the present bridge. The new river bridge will be given a uniform rising grade from north to south so as to conform to the existing street grade at the north end and to the grade of the canal bridge at the south end.

The main span over the canal is a 235-foot truss span resting on concrete piers of the dumb-bell type and connected with the concrete road south of the canal by means of a steel and concrete viaduct and a short embankment.

DESIGN SPECIFICATIONS.

The design of the Illinois Waterway bridges conforms in every particular to the latest standards established by the Highway Division.

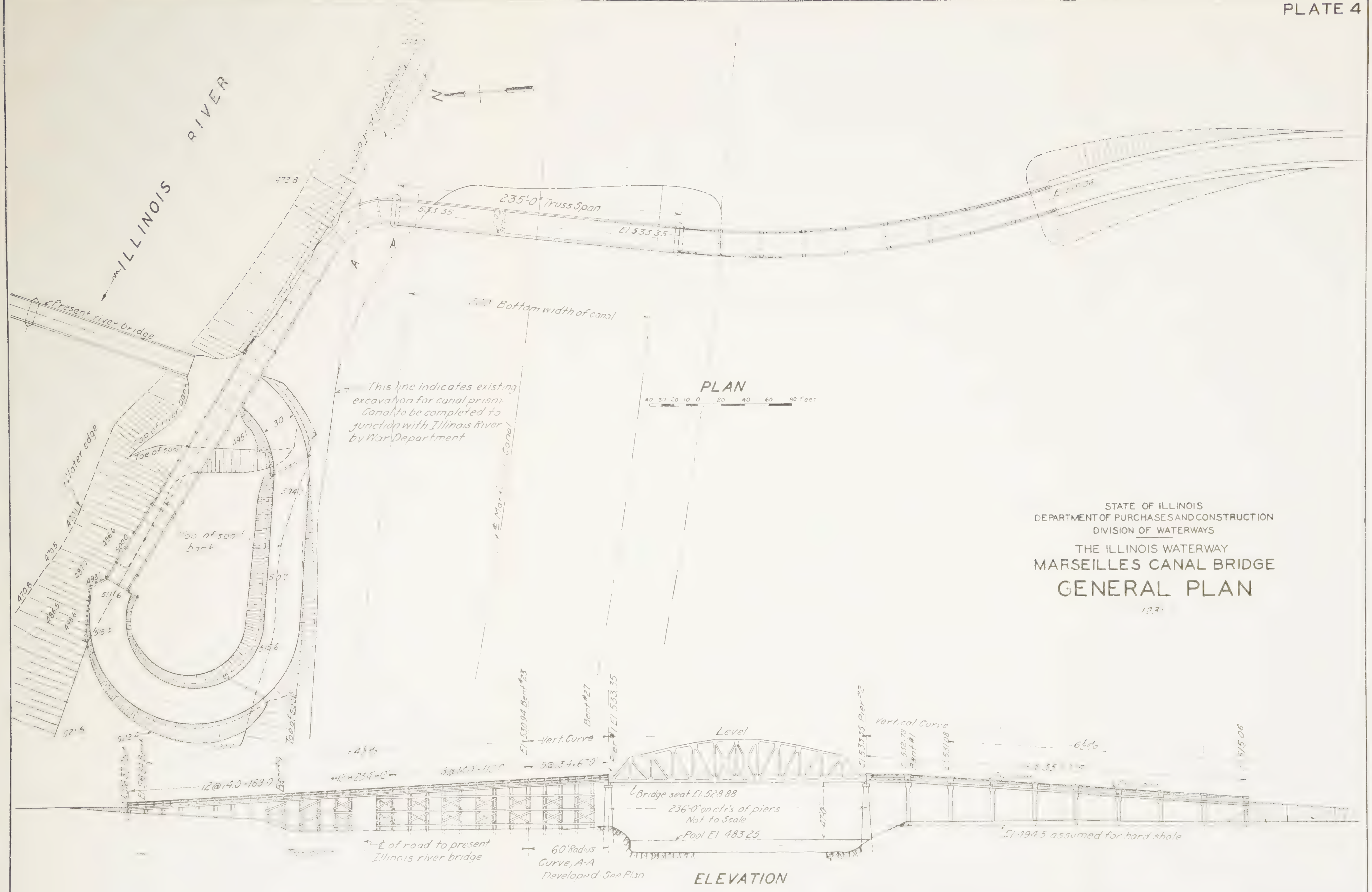
The following design specifications have been adopted:

For features common to stationary and movable bridges: American Association of State Highway Officials' "Standard Specifications for Highway Bridges and Incidental Structures," 1928.

For features special to movable bridges: O. E. Hovey's "Specifications for Movable Bridges," 1925.

The Brandon Road, Smith's Highway and Marseilles Canal bridges, are being designed for 15-ton trucks (Live Load: H. 15). The Joliet bridges, and the LaSalle Street bridge which is within the city limits of Ottawa, are being designed for 20-ton trucks (Live Load: H. 20).

PLATE 4



STATE OF ILLINOIS
DEPARTMENT OF PURCHASES AND CONSTRUCTION
DIVISION OF WATERWAYS

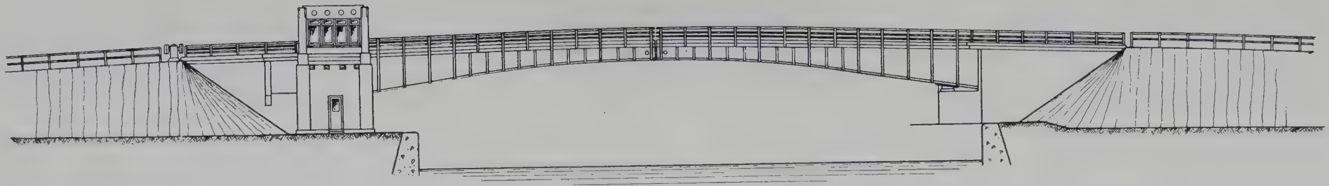
THE ILLINOIS WATERWAY

MARSEILLES CANAL BRIDGE

GENERAL PLAN

1931

PLATE 3



Brandon Road Bridge.

Division of Waterways, State of Illinois.

PROGRESS OF WORK.

As mentioned elsewhere, the most suitable designs for the Joliet bridges and for the Brandon Road bridge were determined by a design competition.

Prior to the preparation of the judges' report the designs submitted —a total of 36—were analyzed and checked in this office so as to establish the merits and relative cost of the various designs.

The results of this analysis were made use of by the Board of Judges and were incorporated, with little or no change, in its report. This work occupied the entire time of the bridge section during the month of December, 1930, with overtime work every night for three weeks.

The following drawings have been completed:

Van Buren Street Temporary Bridge.
Superstructure, Jackson Street Bridge.
Superstructure, Jefferson Street Bridge.
Brandon Road Bridge.
Marseilles Canal Bridge.

A comprehensive set of general construction specifications has also been prepared which, together with brief special specifications for each individual bridge, will govern the construction of all the bridges.

Complete contract documents have been prepared for the above mentioned five bridges.

CHESTNUT STREET BRIDGE, OTTAWA.

The Chestnut Street bridge over the Illinois and Michigan Canal in the city of Ottawa was completed at a total cost of $23,440, as per contract. This is a hand operated swing bridge.

Owing to the dwindling importance of the Illinois and Michigan Canal, this bridge was designed so as to give a clear channel for navigation only slightly wider than that provided by the locks and aqueducts which limit the size of vessel that can be accommodated by the canal.

Compared with other bridges previously constructed this effected a saving of nearly $10,000, while at the same time it resulted in a lighter bridge and one more easily and quickly operated by manual labor.

The Chestnut Street bridge has been in operation for almost a year and has given excellent service.

FIELD OPERATIONS.

By JOHN H. WALKER, *Division Engineer.*

CARE AND SALE OF STATE EQUIPMENT.

In accordance with the orders of Director Hon. Henry H. Kohn, all active construction having been stopped earlier in the spring, the contractors' fee cost operations were brought to a complete close on July 5, 1930. The contractors—both Green & Sons Company on the Brandon Road Lock, Dam and Wall jobs (Projects 5 and 6), and the Congress Construction Company on the Dresden Island Lock and Dam (Project 3),—withdrew their men who had been employed by the State under their respective contracts for furnishing "superintendence of labor and management of construction." Thereafter a skeleton force only was retained under the direct employ of the State on each project. This force was comprised mostly of men who had been employed previously on the job under the contractors and were familiar with the location and operation of such equipment as it was necessary to use to maintain the works in safety. Their duties were, in general, little more than that of watchmen but the possibility of fire and of flooding of cofferdams during high water stages required that the men be of a caliber competent to handle such emergencies should they arise.

INVENTORY AND APPRAISAL OF EQUIPMENT.

As soon as the contractors had withdrawn there was started a complete inventory of all material, equipment and supplies that remained on hand on the various jobs. The writer, in company with Mr. S. J. Deitch and Mr. Charles Hamilton of the Chicago office, inventoried everything on the Dresden Island Lock and Dam operation, as well as on the State dredge fleet, the latter not as yet having been turned over to the State inasmuch as it was being operated on a unit price contract and not fee cost basis. The inventory work at Brandon Road was carried on by Mr. Ralph Heath and Mr. G. P. Fleetwood, with three men of their engineering crew, who were retained for that purpose. Before the inventories had been completed, the two appraisers, Mr. Kable representing the State of Illinois, and Mr. Callahan representing the U. S. Engineer Department, started work of appraising in order that a fair price could be arrived at. The completing of the inventory and appraisals carried through July, August, and well into September.

As soon as the appraisals had been finished the work of preparing the jobs for an idle winter was gotten under way. At Dresden Island Lock and Dam prior to commencing construction a complete camp had been erected and furnished in order to house workmen on the job, inasmuch as this project is located twelve to fifteen miles by road from the nearest towns where boarding accommodations may have been available. This camp was fully equipped with steam heat and hot and cold running water in each of the seven bunkhouses, the two engineers' residences, and the kitchen and mess quarters. To properly prepare this camp for winter it was necessary to disconnect the water lines running into each of the bunkhouses and drain the water lines to prevent bursting from freezing. These camp buildings also had to be protected against fire, and to do this a pressure was maintained, night and day, on the boiler that could be used to operate the steam fire pump, and also supply enough heat to the deep well pump and supply tank reservoir to keep them from freezing, thereby cutting off the water supply. Fire stations were established and metal barrels of salt water, placed at convenient locations throughout the entire job, were kept in readiness for emergencies. A system of signals was also arranged with nearby farmers whereby upon certain whistled signals blown on the siren, these men would report at once to assist the regular crew. The fire hazard at the Brandon Road projects was not as bad inasmuch as the job was located very close to the city of Joliet and good fire protection could have been obtained upon short notice; however, fire stations were also established and fire barrels filled with salt water placed at convenient points for emergencies.

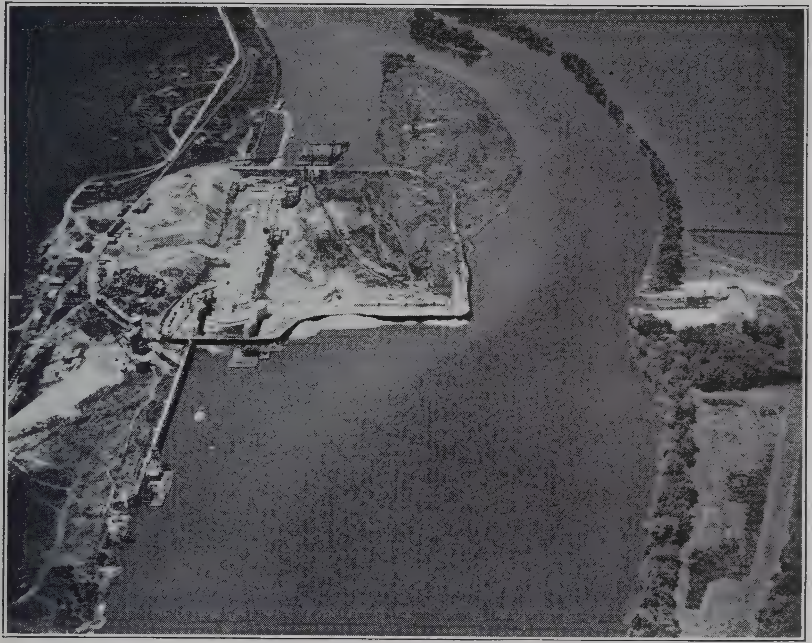
On both projects there was a considerable quantity of equipment driven by gasoline engines. This type of equipment, if allowed to stand for a long period without being thoroughly oiled, deteriorates very quickly with rust. This is particularly true where the cylinder walls are not thoroughly coated with a film of oil, variations in the temperature having a tendency to make these walls sweat and form enough moisture to cause rust on the inside faces of the cylinder walls which practically ruins the engine. In order to avoid damage of this character, every piece of equipment operated by gasoline motors was started up at intervals and given a thorough and complete oiling on all working parts. While doing this work mechanics who had been retained on the maintenance crew made such repairs and adjustments as could be made without the expense of purchasing additional new parts. In this way every piece of equipment on the Dresden Island Lock and Dam was overhauled and also a large portion of the equipment at the Brandon Road Lock and Dam so that at least such equipment as did not require new parts was in fair working order. There was a small quantity of red lead and linseed oil on hand at Dresden Island and to protect the equipment which could not be housed the paint was used as far as it lasted to protect against rust from winter weather, the cranes, compressors, and other heavier outside equipment being given two coats. There was no paint on hand at the Brandon Road operations, so such equipment as could not be stored inside was given a heavy coating of black oil to prevent deterioration from rust during the winter months.

DREDGING FLEET.

Sometime in December settlement was finally made with the Congress Construction Company on their contract for dredging (Contract 9 A C & D) and the dredge fleet was returned to the State. At that time the fleet which consists of a large dredge, a tow boat, two quarter boats and several miscellaneous steel barges, as well as two or three launches, was anchored in the Illinois River near Morris. In this location it was not possible to safely protect this equipment from the possible ravages of floating ice and high water. The Illinois River at Dresden Island Lock and Dam had been closed off by the cofferdam for the lock construction between big Dresden Island and the main land on the south side of the river, forming a well protected harbor. It was decided to bring the fleet to this point and accordingly operations were started about the first of January, 1931, to tow the entire fleet to this harbor. It was necessary to dredge a channel sufficiently deep within the harbor to allow the dredge which has a draft of six feet to float at the lowest possible water stage. No difficulties were encountered in towing the boats from Morris. With the fleet located here it was practically impossible for it to be damaged from ice and high water stages and the crews were dispensed with except for a few men who were retained because of their knowledge of the equipment and its operation in the event that some emergency might require their services. During the cold winter months it was necessary to keep up steam on the dredge so that pipes would not be burst from freezing. Some small repair work was also carried on to keep the equipment in fair working order.

UNITED STATES ADVERTISES FOR BIDS.

The U. S. Engineer Department, early in January, advertised for bids for the completion of both the Dresden Island Lock and Dam and the Brandon Road Lock and Dam. When these contracts were advertised, each prospective bidder who took out a set of plans was advised that a list of equipment owned by the State and which had been used on the projects for which bids were being received, was available for perusal, giving the quantities, make, age, and other full description, together with appraised sale value and that this equipment under the law was only salable by the State to the successful bidder for the completion of the Illinois Waterway projects under the U. S. Engineer Department contracts and could only be sold at not less than the appraised value.



Aeroplane view of Dresden Island lock and dam a short distance below the confluence of the Kankakee and DesPlaines Rivers showing status on June 30, 1931.—*Photo by Chicago Aerial Survey Co.*

STATE EQUIPMENT AT DRESDEN ISLAND.

Federal bids were received on January 30, 1931, for the completion of Dresden Island project, and the Congress Construction Company was the successful low bidder. This company immediately took over, at the appraised valuation, the entire stock of material, equipment and supplies on hand at the Dresden Island project, as shown by a re-inventory deducting items used in maintenance, etc. A brief description of this contract of sale is as follows:

SUMMARY OF CONTRACT OF SALE TO CONGRESS CONSTRUCTION COMPANY OF MATERIAL, EQUIPMENT AND SUPPLIES, DRESDEN ISLAND LOCK AND DAM.

Class of items.	Appraised valuation.	Deductions.		Final agreed valuation.
General equipment	$90,737 15	Duplications	$1,572 99	
		Reserved by State	454 50	
		Exchanged	1,162 50	
		Missing	92 88	
		Expended	52 30	
		Errors (page 2)	10	
		Total	$3,335 27	$87,401 88
Lumber—153,414 BMft	3,732 13	Deduct	280 32	3,451 81
Camp equipment	2,030 69	No deductions		2,030 69
Supplies and repair parts	10,530 26	Duplications	$276 00	
		Expended	971 30	
		Permanent structure tile culvert	728 20	
		Total	$1,975 50	8,554 76
Storehouse supplies	5,867 24	Duplications	$588 90	
		Expended	143 90	
		Condemned dynamite	490 00	
		Total	$1,267 40	4,599 84
Duplications				1,182 37
Transferred	179 65	No deductions		179 65
Totals for entire inventory appraisal of this contract of sale	113,077 12	Total deductions	$6,858 49	
		Less agreed value duplications	1,182 37	
		Net deduction	$5,676 12	
Total final agreed valuation				107,401 00

Deductions on the preceding summary of contract of sale are explained as follows:

Duplications: During the period of making appraisals some items were moved to other storage points and thus in some cases were appraised at their original location and again after being stored at other places.

Reserved by State: Items which were for use on other work and would have had to be purchased new, if sold.

Exchanged for Equipment: This covered a special case where the Congress Construction Company had made some valuable improvements on the State dredge fleet by installing a hydraulic pump and the State exchanged with the company for this a set of twin marine motors.

Stolen or Missing: Items which were either stolen or lost between the period of appraisal and the re-inventory at time of sale.

Expended or Demolished: Items used in maintenance of works during idle period, July 5, 1930 to February 15, 1931.

Permanent Structure: Items which properly belonged to and were a part of the lock and dam structure which had been erroneously included in the inventory and appraisal.

Condemned Dynamite: This dynamite had so deteriorated from being stored over a long period that it became very dangerous to handle due to the nitro glycerine content having leaked from containers and soaked through cases. The dynamite was destroyed by burning, in accordance with instructions from powder experts.

In accordance with the terms of contract of sale, upon complete execution, this company paid to the State $26,850.25, or 25 per cent of the total purchase price, the balance being payable in installments, or 25 per cent three months after execution of contract, 25 per cent additional six months after the execution of the contract, and the balance three months thereafter.

STATE EQUIPMENT AT JOLIET.

Bids were received on February 2, 1931, for the completion of the Brandon Road project, and the Connolly Contracting Company of St. Paul, Minnesota, was the successful low bidder. On this project the aforesaid company had only a small portion of the work to complete and, therefore, did not require as much equipment. However, they purchased items representing more than 50 per cent of the total appraised valuation. The articles remaining were re-inventoried and a list was compiled for a sale under sealed bids in accordance with the Civil Administrative Code.

This purchase contract provided for payment of $42,114.65 by the contractor to the State. After operations had been underway for some time at Brandon Road the contractor decided that a considerable portion of the equipment and supplies which they had not considered taking when their first bill of sale was made up would be useful in speeding up operations, and was purchased by them. This latter bill of sale was not completed until after the close of this fiscal year.

It was also apparent that some of the larger equipment was in demand for short period rentals. Authority was requested and granted and several pieces of equipment were rented to various contractors. The total proceeds received to July 1, 1931, amounted to $2,247.50, which was also credited to the Illinois Waterway Fund.

The material, equipment and supplies to be sold under sealed bids were carefully classified, given numbers for identification and the list was prepared for printing in booklet form to receive bids as soon as authorization for sale could be obtained.

As the work progressed on the completion of the lock and dam project under the government supervision preparations were commenced for necessary field work on the bridges in Joliet and Marseilles to supply the Chicago office with required information.

REPAIRS TO ILLINOIS AND MICHIGAN CANAL.

In the latter part of June a culvert under the Illinois and Michigan Canal about one and a half miles west of Seneca caved in after a heavy storm and the waters of the canal rushed through, flooding some of the surrounding territory. The writer was called upon by Mr. Walter of the Illinois and Michigan Canal, and the work of repairing was commenced at once. This culvert was probably one originally built at the time the canal was constructed, and hence was of the old stone and lime mortar construction with flat bottom and arched top. It had been lined with 8-inch by 8-inch timbers many years ago when it had probably given indications of failure. In order to save expense and also reopen the canal to navigation at the earliest possible date, it was decided to do the work with the crew from the dredge fleet and the possible addition of a few laborers. A cofferdam was constructed around the hole in the bottom of the canal to divert the water. A heavy gage, 36-inch Armco corrugated steel culvert, in 10 feet lengths was placed and then jacked through the old stone culvert, removing the timber lining as the pipe was pushed ahead, until the entire length of 127 feet had been rebuilt. When the culvert had all been placed, the dirt was "puddled in" with plenty of water so as to form a complete seal between the new corrugated culvert and the old stone culvert, in the space where the timber lining had been removed and had not been completely refilled by the pipe. A new concrete wing wall was built on the north, or intake end, and the one on the south, or discharge end, was patched.

FLOOD RELIEF REPORT.

By L. C. Craig, *Division Engineer.*

This report for the year ending June 30, 1931, covers flood relief done under Flood Relief Acts passed by the Fifty-sixth General Assembly.

This work consisted of the repair and enlargement of levees, the construction and repair of outlet channels and ditches and other flood control works and is a continuation of work started last year shortly after these Acts were approved.

Work proposed and under contract is located on the Mississippi River and along several of the streams of the State.

ENGINEERING ORGANIZATION AND METHODS.

With headquarters at the Chicago office the writer continued the investigation of flood relief applications. During the year some 25 of these applications were investigated and reports made to the Chief Engineer.

BEARDSTOWN OFFICE.

The office opened at Beardstown May 31, 1930, was continued as headquarters for survey parties engaged in the investigation of flood relief applications and the inspection of work under contract in the Illinois River valley. At this office hydraulic computations were made of the Illinois River flood flows to determine the feasibility of various proposed levee set-backs.

HARRISBURG OFFICE.

The work at the Harrisburg office consisted of the necessary surveys and inspection for flood relief projects under construction in Saline County and neighboring counties. Among these projects were the straightening of the Middle Fork of the Saline River near Harrisburg, the straightening of the North Fork of the Saline and the straightening of Cache River and Bay Creek.

Preliminary surveys were also made for several new projects and it is expected that funds will be used for one or more of these projects during the coming year.

SUMMARY OF WORK ACCOMPLISHED.

The following is a brief summary of work accomplished under each of the flood relief acts.

Of the $219,229.47 re-appropriated by House Bill No. 785, $162,131.69 remained unexpended on June 30, 1930. Of the latter amount, $145,579.39 was expended during the past year leaving a balance on June 30, 1931, of $16,552.30. The funds re-appropriated under this Act have been used largely for emergency projects, as contemplated under the provisions of the original Act in force July 1, 1927.

ILLINOIS RIVER VALLEY.

Of the $1,000,000 appropriated by House Bill No. 654 for use in the Illinois River Valley, $945,533.95 remained unexpended on June 30, 1930. Of the latter amount $427,948.96 was expended during the past year, leaving a balance on June 30, 1931 of $517,584.99. The funds appropriated under this Act have been used largely in cooperation with the Federal government in raising and straightening the levees of drainage districts along the Illinois River south of Beardstown.

OTHER WORK UNDERTAKEN.

Of the $600,000 appropriated by House Bill No. 296 for all rivers of the State other than the Illinois River and its tributaries, $590,646.98 remained unexpended on June 30, 1930. Of the latter amount $217,227.74 was expended during the past year leaving a balance on June 30, 1931 of $373,419.24. Nearly all the remaining funds from this appropriation have been allotted to various projects and will be expended during the coming year.

Of the $30,000 appropriated by House Bill No. 790 for use in repairing the levee of the Indian Grave and South Quincy Drainage and Levee Districts $14,119.86 remained unexpended on June 30, 1930. Of this amount $1,741.49 was spent during the past year leaving a balance on June 30, 1931, of $12,378.37.

SUPERVISION OF PUBLIC WATERS.

By W. G. POTTER, *Drainage Engineer.*

LAKE MICHIGAN WATER LEVEL.

In July and August, 1929, as reported in the 12th and 13th Annual Reports, the level of Lake Michigan was at the highest stage in 43 years previous after a phenomonally rapid rise. In the 13th Report mention was made of a gradual lowering of this level. During the fiscal year just past, the lowering of the water stage continued at a remarkably rapid rate, the fall from July, 1930, to February, 1931, being 2.2 feet. In addition to this, the usual spring rise in 1931 was practically absent, being only 0.1 foot between February and June. This was undoubtedly due to the abnormal lack of rainfall during the entire year, both in the Lake Michigan and Lake Superior watershed areas, the indication being that ensuing months would continue the downward movement of the lake level.

Because of this low water condition, the storms of the past year have been much less destructive to shore properties, and much has been done by the park systems of Chicago and by private owners to replace the shore protections previously destroyed.

FOX REVER LEVEE.

During the past year, it became necessary, in order to keep the water level above McHenry Dam at a good boating stage, to construct about 1,860 feet of low levee to fill the gap between existing levees shortly above the dam. Bids were received and the contract let at 28 cents per cubic yard and the levee was built. This prevents overflow leaving the river and passing down over private property which has caused considerable damage and complaint in past years.

OGDEN DITCH.

Part of the West Fork of the South Branch of the Chicago River west of Cicero Avenue usually called "Ogden Ditch" has long been an eyesore, a breeding place for mosquitos and a damage to property along its banks because of having so little flow that for the greater part of the time it is stagnant. During the past year after considerable trouble in arranging for drainage of storm rainfall, permits have been given to fill that part of the ditch from 48th Avenue to 52nd Avenue, and from 52nd Avenue to the part filled by the Sanitary District near 56th Avenue. Thus, with the part filled by the Sanitary District about two miles of the worst part of Ogden Ditch has been or is now being filled. East of 48th Avenue there is considerable flow in Ogden Ditch and there is much less nuisance caused by it.

State Levee. Fox River above McHenry Dam, built in 1931.

INSPECTION TRIPS.

Numerous inspection trips have been made during the year to Fox River and lakes, to the Rock and Kishwaukee rivers and to various other streams in regard to permits for shore walls, channel or other improvements and to prevent encroachments.

Shore walls are being constructed in greater numbers each year along the Fox and Rock rivers and on some of the lakes. One improvement completed on the Rock River at Rockford during the past year consisted of a shore wall about 2,000 feet long which has much enhanced that part of the river, both in beauty and in property value. Other trips have been made to various streams in regard to proposed dams for which permits were requested.

INSPECTORS.

Because of the rapidly increasing amount of work being done by property owners along the Fox River and the Chain of Lakes, it has been necessary to increase our inspectors on this stream, and now we have one man on the lower Fox from its mouth to Carpenterville, one from Carpenterville to and including Pistakee Lake, and one from there to the State line including the Fox and its lakes.

Other inspectors now in the service are as follows: two on Lake Michigan Shore line and adjacent streams, one on the Chicago River, one on the Calumet, one on the I. & M. Canal, and one each on the Rock, Illinois, and DesPlaines Rivers, a total of eleven.

PERMITS ISSUED.

Formal permits issued during the year are as follows:

Bridges	52	
Calumet River docks rebuilt or repaired	3	
Chicago River docks rebuilt or repaired	20	
Lake Michigan, piers and bulkheads	10	
Transmission lines, cables and pipe lines	38	
Fox River and Lakes, piers, shore walls, etc.	39	
Rock River piers, shore walls, etc.	5	
Dredging	19	
Dams	5	
Tunnels	6	
Drainage Districts	3	
Sewer outlets	9	
Miscellaneous	10	
Total formal permits		219
Bridges on weekly permits to Division of Highways		449
Total permits		668

During the previous year the total number of permits was 525.

THE FOX RIVER AND ITS USE.

By W. G. Potter, *Drainage Engineer.*

Beyond question, Fox River is one of the most beautiful streams in Illinois. It is a noble birthright to the people of the State and should be preserved to them in all of its original beauty.

Unfortunately in years past the river has been considered mostly in a utilitarian way. Cities along the stream used it for disposal of raw sewage and for dumping of refuse. Manufacturers encroached on it with the double purpose of disposing of their waste and of building more land for their factories. Other manufacturers utilized the river by constructing dams and using the water power developed.

During the last few years, however, the communities along the river have opened their eyes to the possible beauty of the Fox and to the value of it as a play ground for them and for the millions of people within easy reach of its beauty spots.

Formerly the river and its lake region were available to only the few people of the immediate region. With the coming of the automobile, however, came a revolution in the methods of transportation. Good roads began to stretch out in every direction. People who had previously been confined within the narrow limits of the cities with their smoke

New York Street Bridge.
Fox River at Aurora.

Burton's Bridge, Fox River. Showing debris from old bridge at low water time and impure air, began to explore the country formerly almost unknown to them. They found recreation and pure air. They discovered beautiful streams and sparkling lakes. Soon, instead of making occasional excursions to enjoy these benefits, they began to think of the boating and fishing and other pleasures, and to dream of having a cottage in some beauty spot where they could spend their Sundays and holidays or remain for a longer vacation. Later, cottages and houses began to be seen, then shore subdivisions were laid out and sold. Now we find the river in many places lined with summer homes, either the elaborate palatial country homes and estates of the rich or the more modest homes of the less wealthy.

PRESENT CONDITION OF THE RIVER.

From the state line to the village of Fox Lake, the river passes through or connects with a series of lakes and at ordinary water is navigable for motor boats, the level being maintained by a State dam about two miles below McHenry. Below this dam the river is obstructed by eleven dams, of which nine are in use part of the time for water power. Excepting the Dayton dam located near the mouth of the river, it is estimated by the U. S. Engineer that only from 2,500 to 3,500 horse power is developed. During much of the time very little power can be developed because of low water conditions, as will be shown below.

PRESENT DROUTH AND LOW WATER.

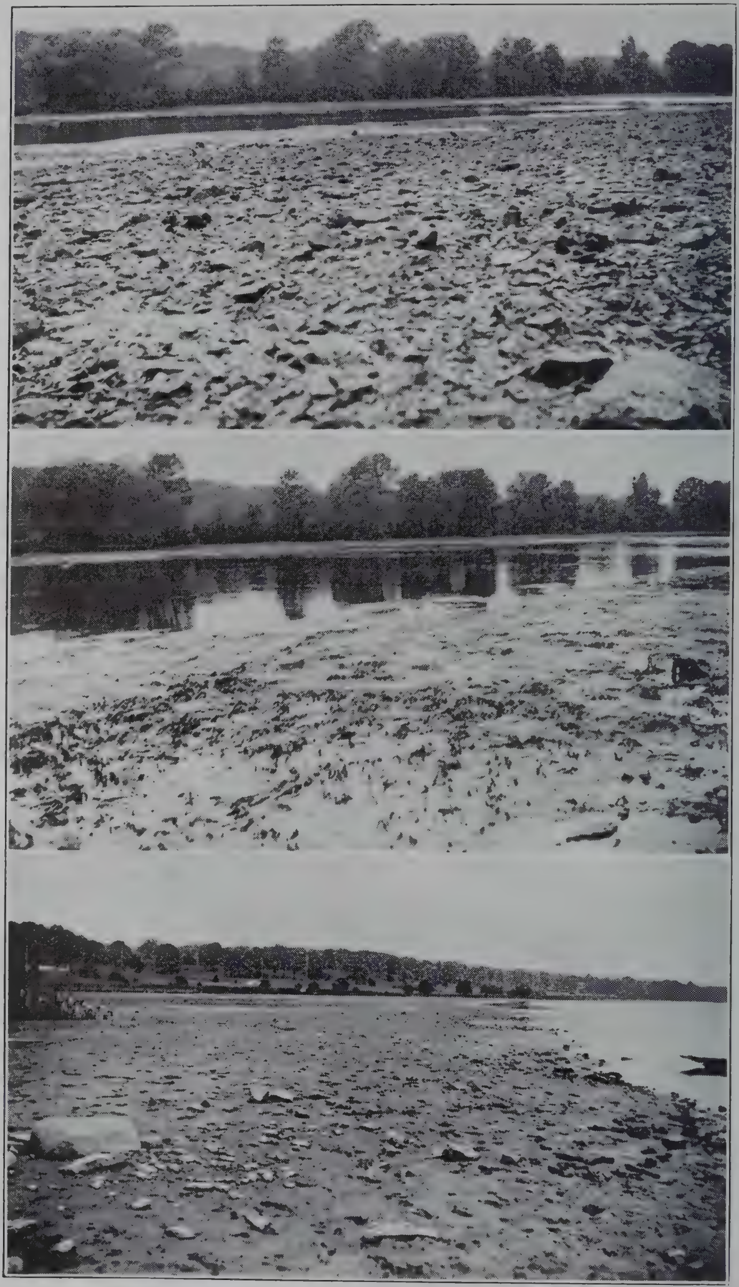
The past year has been one of the excessive drouth on the Fox River and consequently the complaints have been numerous in regard to low flow. To show the seriousness of this drouth, the following data are shown in regard to rainfall and stream flow.

DEFICIENCY OF RAINFALL BELOW THE NORMAL IN NORTHERN DISTRICT OF ILLINOIS MAY 1, 1930 TO SEPTEMBER 1, 1931.

(From U. S. Weather Reports.)

Month.	Actual Rainfall inches.	Deficiency, inches.	Excess inches.
May, 1930	2.16	1.72	
June	4.27		0.54
July	1.30	2.03	
August	2.38	0.94	
September	3.10	0.60	
October	2.81	0.39	
November	1.87	0.09	
December	0.50	1.21	
January, 1931	0.64	1.08	
February	0.49	1.11	
March	2.42	0.10	
April	2.15	0.93	
May	4.25	0.47	
June	3.80	0.07	
July	2.45	0.92	
August	3.31		0.03
Total	37.90	11.66 0.57	0.57
Net deficiency in 16 months		11.09	

During the same period, LaSalle showed a deficiency of 11.50 inches.



Fox River above Geneva Dam. Showing unsightly bottom due to pool level being drawn down too much by power users.

The rainfall here shown is the monthly average of all weather bureau stations in the entire north third of the State and is taken because no weather bureau stations are shown in the Fox Valley except at LaSalle, located at the mouth of the Fox.

Because of the seriousness of this drouth and of the time of writing this report, the rainfall and discharge tabulations are extended to cover July and August, 1931.

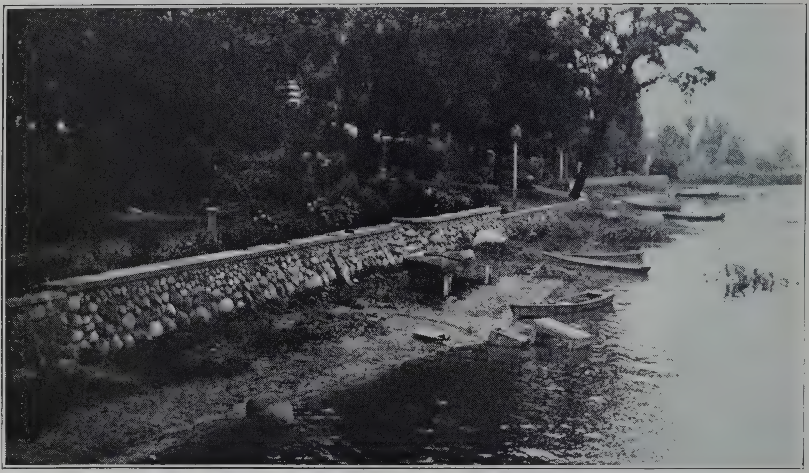
The result of this great deficiency of rainfall is shown in the tabulation herewith of the discharge in cubic feet per second of the Fox River at Algonquin. The figures given show the mean discharge for each month and are quoted from the records of the U. S. Geological Survey, Water Resources Branch.

DISCHARGE IN CUBIC FEET PER SECOND.

Month.	1929	1930	1931
January	-------------	527	269
February	-------------	931	354
March	-------------	1,140	420
April	-------------	1,320	386
May	1,870	937	215
June	1,010	356	331
July	555	235	169
August	722	178	88
September	364	137	-----------
October	536	295	-----------
November	755	339	-----------
December	427	283	-----------

From this can clearly be seen the great drop in discharge of the river for the entire period covered by the deficiency in rainfall as shown in the previous tabulation. According to indications this low discharge will continue and possibly be even less in September and October of 1931 unless heavy continuous rains occur to raise the stream flow.

The above is a comparison of monthly mean flows. It may not be amiss to give in detail some of the daily flow records in the last few months. In April, 1931, with a monthly mean of 386 c. f. s., we find 15 days less than 300, 8 days less than 250 and 4 days at the minimum flow of 212 second feet. In May, 1931, the monthly mean being 215 second feet, there were 9 days with less than 150 and 4 days at the minimum of 137 second feet. In June, 1931, with a monthly mean of 331 second feet, the showing was somewhat better with 7 days at less than 250 and 2 at the minimum of 205 second feet. This better showing in June corresponds with the increased rainfall of May and June, which showed a deficiency from the normal of only .54 inches, these two months normally producing the heaviest rains of the year. In July, 1931, the discharge again decreased and twenty-five days showed less than 200 second feet, there being 6 days down to 115 second feet. In August, 1931, the highest discharge of the month was 115 second feet and there were six days as low as 68 second feet.



Shore Improvements. Fox River near Rawson's Bridge.

Algonquin Dam on Fox River.

Shown in tabulation the daily discharge for April to August, 1931, inclusive, is as follows:

DAILY DISCHARGE AT ALGONQUIN, 1931.

Discharge c. f. s.	Days.				
	April.	May.	June.	July.	August.
Less than 800	30	31	30	31	31
Less than 600	24	31	30	31	31
Less than 400	19	31	22	31	31
Less than 250	8	21	7	26	31
Less than 200	0	18	0	25	31
Less than 150	0	9	0	23	31
Less than 100	0	0	0	0	21
Less than 80	0	0	0	0	19
Less than 70	0	0	0	0	6

These figures for discharge show how serious the drouth is in the Fox River Valley.

EFFECT OF LOW FLOW ON THE STREAM.

The effect of the lack of rain, combined with the evaporation during the abnormally hot summer, is seen everywhere from the State line through the Chain of Lakes and down the river to its mouth. The small isolated lakes like Lily Lake, Duck Lake and Long Lake are extremely low. Large mud flats are seen along the shores where should be water. The larger lakes also are far below normal and, because of the low stage, are in many places grown up with weeds so that navigation by motor boats is much impeded.

In the river below the McHenry Dam, the situation has been still worse. The flow has been insufficient to maintain a normal stage and instead of a sightly wide stream we have had a comparatively tiny stream and vast expanses of mud flats on either side. This has been much increased by the action of the water power users at some of the dams. In order to get all the power possible out of the stream, it is the custom of some of the power users to draw the water down each day until no head remains at the dams. This department has repeatedly requested and issued orders that the water at no time shall be drawn more than six inches below the crest of the dams. However, in spite of that, the writer has made measurements when the water was as much as fifty inches below the crest. This results in extremely obnoxious conditions in the various pools above the dams and the natural beauty of the streams, as well as their boating capabilities, are destroyed.

CONCLUSIONS.

As stated above, the total power developed or capable of being developed on the Fox River is very small. Furthermore, all except two of the power plants on the river have auxiliary steam plants to use when power cannot be obtained from the river.

It is the opinion of the writer that for the benefit of the entire region, one of two things should be done. First, the State should acquire by purchase or condemnation the water rights along the river, excepting

Pistakee Lake Home.

Pistakee Lake Homes.

of course the Dayton Dam, located close to the mouth of the river. Second, if that were to prove too costly, a law should be passed by the next legislature, giving this department means to compel the maintenance of water level at the crest of each dam or at a fixed elevation near such crest.

In either case the result would be a sightly stream void of the present expanse of uncovered bottom; it would much improve the sanitary conditions; it would do away with the shallow pockets of water which have imprisoned and killed many fish during the past year, and it would make boating a pleasure instead of an impossibility. Also, in either case the water stage might be raised by the use of flashboards or by raising the dams, thus extending the pool levels further upstream.

Eventually it is the writer's opinion that one of these solutions will be carried out, and the next step will be to construct a lock or marine railway at each dam. With this done and the occasional sandbars removed by dredging, the Fox River will come into its own, and will be the summer home and the playground, the pleasure resort and the beautiful stream which nature intended it to become. Property along its banks and around its lakes will become more and more valuable, and the State will have increased return, both in money value and in the health and pleasure of its citizens.

STREAM POLLUTION AND SANITATION.

By M. C. Sjoblom, *Sanitary Engineer.*

During the past year a large number of investigations have been made covering cases of pollution throughout the State. Some of these have been made directly for this department in connection with its prescribed duties. A number of further investigations have been made at the request of the State Sanitary Water Board of which Mr. Henry H Kohn, Director of our department is a member. The latter investigations and inspections have been made principally in the north end of the State, By having a man from this office make these inspections considerable time and expense have been saved over that necessary to send men from Springfield.

DESTRUCTION OF FISH LIFE IN STREAMS.

Among the most interesting investigations were those covering the destruction of fish life in streams. Three such investigations were made. The first case occurred on the last day of last August. The undersigned was called from Springfield on Sunday before Labor Day and requested to go directly to Geneva where a sudden killing of fish had been reported. Upon visiting the site in question it was found that thousands of fish large and small had been killed. These included almost all species found in this vicinity. The investigation revealed the cause to be the discharge of a vat of acid from a Geneva industry, such dumping being occasioned by the fact that the Labor Day holiday offered an opportunity to shut down the plant and install new vats. In this case the heavy killing of fish was due to carelessness, as is often found to be the case. Eventually, it would seem, the State must take steps to punish such offenders for such occurrences are had far too frequently and destroy far more fish at one time than are probably caught in a year by fishermen along the stream.

The second case of the destruction of fish also took place in Fox River. Complaint was first made by citizens at Serena between 30 and 40 miles below Aurora. It was found that large numbers of fish had been killed during February. The fish being almost universally affected by sores and blindness. Growths in and about the mouths too were prevalent. Careful investigations, requiring a number of days' work along the river, indicated that some discharge at Aurora had doubtless caused the trouble. The marks on the fish and all the evidence pointed toward gas house or similar wastes being responsible as identical evidence was found some years ago when gas house wastes were positively found to be the cause. However, in this case no definite act of the gas company or any local industry could be found to explain the situation and the definite source of pollution cannot be given.

The third case of killing of fish occurred in DesPlaines River just below Libertyville. In this case large numbers of fish, most of them mature, were found dead. In this case there seemed to be no question but that the river with its unusually small flow of last winter had its oxygen depleted by the Libertyville sewage with the result that the fish smothered. The bulk of the fish were apparently killed following one of the few cold spells last winter when the greater portion of the stream affected froze over suddenly shutting off the necessary access to the air as well as the air itself.

The work during the past year has again emphasized the awakening of the public to the necessity as well as possibilities of preventing nuisance and damage by proper precautions. Each year it appears that the public is becoming better educated as to pollution and its causes and is demanding more effective means of compelling the proper disposal of all offensive wastes.

ILLINOIS AND MICHIGAN CANAL REPORT.

By John A. Walter, *Auditor and Collector.*

SUMMARY OF SPECIAL CANAL FUND.

July 1, 1930 to June 30, 1931.

Balance on hand July 1, 1930		$81,754.65
Receipts as below	$33,569.18	
Expenditures as below	23,339.79	
Receipts over expenditures	$10,229.39	10,229.39
Balance on hand July 1, 1931		$91,984.04

RECEIPTS.

Ninety-foot strip, lots and bridge rentals	$16,435.19
Water power rentals	12,342.24
Water pipe rentals and miscellaneous	4,597.06
Tolls and lockages	149.69
Boat house rentals	10.00
Certified copies	10.00
Ice leases	25.00
Total	$33,569.18

EXPENDITURES.

Appropriation for I. & M. Canal	$23,339.79
Appropriation for Illinois Rivers	30,925.99
Appropriation for bridge at Chestnut Street, Ottawa	24,730.57
Appropriation for Culvert at Seneca	3.01

ILLINOIS AND MICHIGAN CANAL EXPENDITURES.

Salary locktenders and officers	$9,000.00
Labor pay rolls	9,750.35
Repairs	1,763.17
Operation and maintenance	2,785.38
Equipment	31.39
Permanent improvements	9.50
Total	$23,339.79

MAINTENANCE NAVIGATION ILLINOIS RIVERS EXPENDITURES.

Salary locktenders, watchmen and officers	$21,984.60
Labor pay rolls	5,398.70
Repairs	391.64
Operation and maintenance	3,151.05
Total	$30,925.99

Number of boats running, tolls and lockage collected on the Illinois & Michigan Canal for period July 1, 1930, to June 30, 1931.

	Joliet.	LaSalle.	Total.
Tolls	$115 70	$33 99	$149 69
Boats cleared	35	8	43

SUMMARY OF ACTIVITIES.

The balance on hand in the Illinois & Michigan Canal Fund on June 30, 1931, was $10,229.39, more than was on hand at beginning of the fiscal year, and $79,679.76 more than was on hand when the Division of Waterways assumed charge of the Illinois & Michigan Canal on July 1, 1917.

Thirteen new leases for small strips of the canal reserve were made, and renewal of joint switch track lease with the Rock Island & Burlington Railroads at Ottawa made at an increased rental of $300.00 per year; lease for thirty-one poles on canal land expired and poles have been removed; one water pipe lease near Utica expired as plant discontinued business; one fencing privilege lease expired and fence removed; ten leases for small strips of canal reserve expired and new leases made with present occupants; no ice cut on canal at Seneca or LaSalle during winter of 1930-1931.

Manufacturers bridge lease at Marseilles has been extended for an additional two-year period; Illinois Traction belt line on canal reserve at Ottawa has been completed and line is now in operation; during the drought of August, 1930, two permits were given to farmers to take water from the canal near Rockdale for a short period and each paid $10.00 for the privilege; two certified copies of lot sale book furnished, to such copies are now attached photostats showing entries in the sale book.

Joint recount of Illinois Bell Telephone Company poles on canal reserve made from Crawford Avenue in Chicago to the west line of

Grundy County, count showed 1,716 poles on canal reserve and rent for the privilege was proportionately reduced; refund on water pipe lease at Ottawa was allowed for period of thirty-seven days while Ottawa level was unwatered.

Nine permits were issued, including temporary bridge across canal at Joliet during construction of new railroad bridge, and pipes and gas mains across canal.

Seven additional test plates of paint and steel were immersed in the canal below Jackson Street Lock and with those previously immersed, are under observation and examined from time to time and record kept of such examinations showing condition of the plates.

Canada thistles on canal reserve at Marseilles and Lockport townships have been destroyed.

Peat beds on the canal reserve west of Lock 11 caught fire and it took thirty days to flood and extinguish the fire.

New swing bridge at Chestnut Street Ottawa constructed at cost of $28,130.57, was opened for traffic on October 10, 1930.

It was found unnecessary to construct the new culvert near Seneca for which the 56th General Assembly made an appropriation of $20,000.00 as the old culvert was in good condition.

Prairie fire at Lock 13 totally destroyed the locktender house, a new five room house is being constructed by the regular canal crew, construction delayed account of crew being required part of the time on other emergency work.

The dredge crew have been continuously at work removing bars and fills from the channel between Locks 8 and 13 and repairing and raising canal banks.

The old drill barge was raised and repaired and used by the Waterway Engineers for making tests for bridges at Ottawa and Smith's bridge.

New upper gate at Lock 14 constructed and installed. Muskrats and crawfish during the past year have done considerable damage to the canal banks, which required constant vigilance to prevent serious damage.

Locktender and towpath walkers' houses and lock structures repaired, barges caulked and dredge boat machinery overhauled.

Channel of canal continues to be in good condition and boats with draft not exceeding forty-two inches have no difficulty in going through the canal between Joliet and the Illinois River west of LaSalle, a distance of sixty-three miles.

On June 22, 1931, a cloud burst near Utica caused the channel near Higby to be filled with sand for a distance of one hundred feet which was promptly removed by the dredge boat; on the same date heavy rains caused the culvert under the canal one-half mile west of Seneca to collapse. The canal was unwatered and start was made at once to replace the collapsed culvert with a thirty-six inch metal culvert pipe. It is expected to complete the work and have canal again watered not later than July 10th.

Navigation closed for the 1930 season on November 25, 1930, and was opened for the present season on June 10, 1931, for boats with draft of not over forty-two inches.

ILLINOIS WATERWAY LANDS.

By John A. Walter, *Auditor.*

Receipts from rental of Illinois Waterway lands from July 1, 1930, to June 30, 1931, amounted to $3,697.09.

There are now in force nineteen farm leases in Starved Rock Pool, in vicinity of Dresden, one near Brandon Road including lease with Marseilles Golf Club.

Indications are that the crops on land leased this season will be better than the average for past several years, but as most of the land is leased on shares and price of grain is so low, the income for this year will be considerably reduced.

As it is expected that the level in Starved Rock Pool will be raised in 1932, there will be no income from it next year.

No expenditures made account of Canada Thistles as all leases provide that lessees destroy them at no expense to the State.

Assisted the appraisers of waterway lands in Will, Grundy and LaSalle counties that are available for sale.

Had copies made of franchises granted by the city of Joliet to the street car lines in Joliet that pertain to the bridges across the canal and river which will be affected by new bridges to be constructed by the State.

Inspections made from time to time of all lands that are leased, particularly that which is leased on shares.

PEORIA RIVER AND RAIL TERMINALS.

By Jacob A. Harman, *Designing and Supervising Engineer.*

These terminals were constructed by the city of Peoria and have been leased to the Inland Waterways Corporation which operates the Federal Barge Lines.

The Peoria River and Rail Terminals are on city property located in the heart of the business district along the Illinois River between Main Street and Green Street. The terminals consist of separate units, for package freight and for bulk freight. There are railroad tracks for each of these units with connections to the tracks of the Chicago Rock Island & Pacific Railroad and the Peoria & Pekin Union Railroad, also an agreement between the city and these railroads that all other railroads in the city of Peoria may have access to the terminals over the tracks of the Rock Island and the Peoria & Pekin Union railroads by paying pro rata of the interest and maintenance costs on tracks used.

The package-freight terminal has a wharf barge moored at the harbor-line which serves as a floating dock or transfer platform over which freight will pass to or from the terminals. The barge is of steel construction with hull 45 feet wide, 230 feet long and 8 feet deep. The deck is enclosed by a steel and sheet metal wharf house approximately 200 feet long and 40 feet wide with eight doors on the outboard side spaced to doors of the Federal Barge Lines' cargo barges, and one door in the inboard side for connection with the escalator to the dock house. A steel gang plank with a wooden floor is installed at each outboard door hinged 12 feet from the outboard side of the barge. These gang planks, when in service, rest directly on the cargo barge and are free to move up and down with the barge as the freight is loaded or unloaded. The barge is electrically lighted inside and out and wired with 5 and 10 horsepower outlets for hoisting. It is also equipped with a 200-gallon per minute electrically operated diaphragm pump.

Peoria River and Rail Terminals—June 15, 1931. Showing the towboat "General Ashburn" landing the first cargo barge at the Peoria River and Rail Terminals. —*Chicago Tribune Photo.*

The stage of the Illinois River ranges approximately 20 feet from low water to extreme flood height. In order to meet these changes in river stage, an escalator is provided between the wharf barge and the dock house.

The escalator from the wharf barge to the dock house is a covered structural steel bridge 17 feet wide, approximately 100 feet long, with a clear head room of 10 feet. The river end of the escalator is suspended on two 4-inch round rods supported by a steel bridge resting upon steel towers carried by two piers of interlocking steel sheet piling driven to bed rock and filled with concrete. The suspension rods are threaded to raise and lower the end of the escalator with a 20 horsepower electric motor mounted on the bridge connecting the towers. The dock house end of the escalator is adjusted to the dock house floor level and supported on two-wheel trucks.

Freight entering and leaving the wharf barge is loaded on two-ton four-wheel trailers. These trailers are conveyed up and down the escalator by two chain-haul conveyors, both reversible, with catches on the chain spaced at 12-foot centers. The speed of the chain is 1 foot per second and each chain is operated by an electric motor through a series of gears. The capacity of each chain-haul is 600 tons per hour with full capacity of two tons for each trailer.

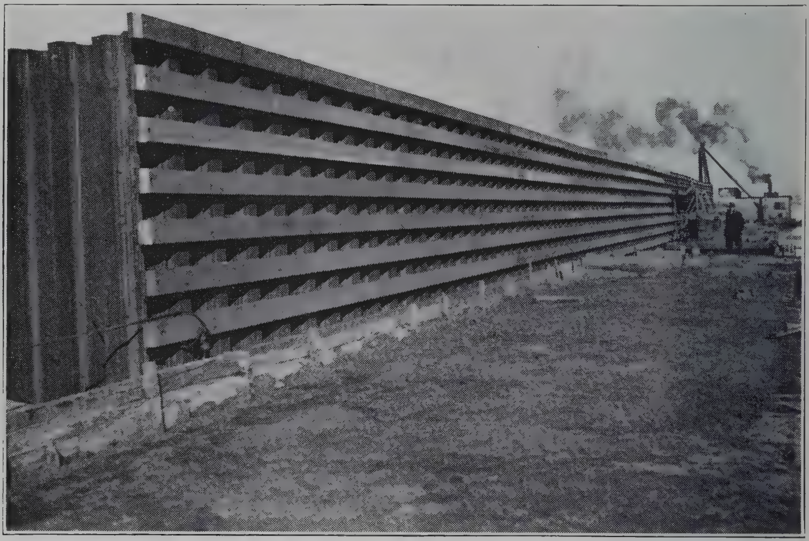
The dock house, located 100 feet from the harbor line, is a one-story brick and concrete building 84 feet wide, 206 feet long with clear head room of 14 feet. The down-river end, 84 feet by 68 feet, is used as a city freight house; the center portion, 84 feet by 45 feet, is used as a concourse from the escalator to other portions of the building and to car loading platforms; the up-river end of the building, 84 feet by 90 feet, is for railroad freight. There are three double doors at the Main Street end of the dock house for loading motor trucks and six doors on the track side to the covered railroad loading platform, which is 20 feet wide and 400 feet long. There are four railroad house-tracks in front of the dock house parallel with the loading platform with capacity of fifty to sixty cars.

Peoria River and Rail Terminal—about May 10, 1931. Looking east from Main and Water Streets, showing the dock house of Peoria River and Rail Terminals. —*Peoria Star Photo.*

A general office, 40 feet by 45 feet, is located on a mezzanine floor in the Main Street end of the building over the city freight house. The superintendent's office, 15 feet by 20 feet, with a pay-off booth, is located on the main floor at the left of the escalator and two-story lavatory and locker rooms for laborers located on the main floor at the right of the escalator. A heating plant for the offices, lavatory and locker rooms is located in basement under the office, with coal storage bin under the car-loading platform.

Equipment for package freight at the dock house includes fifty four-wheel two-ton trailers with automatic couplers, rubber tires and Hyatt roller-bearings; twenty-five two-wheel hand trucks and four tractors.

The bulk freight unit or bulk terminal is located on the harborline approximately 425 feet upstream from the dock house. It consists of a dock wall of interlocking steel sheet piling faced with 6-inch by 12-inch longitudinal wooden whaling 24 inches on center set in steel channels. The dock wall is tied by 1½-inch round rods to a 2-foot by 4-foot concrete anchor-beam located about 40 feet behind and 13 feet below the top of the wall. The fill for the bulk terminal consists entirely of sand. There are two tracks parallel to the dock wall with a capacity of four cars each and a spur track at the upper end for the locomotive crane. The dock wall is approximately 480 feet long and fitted with a hand capstan, chock, kevel and snubbing post at each end and with two intermediate kevels and snubbing posts all mounted on concrete blocks.



Peoria River and Rail Terminals—December 15, 1930. Looking upstream from lower end of the bulk terminal wall showing the finished wall with chafing strips taken off. Barge load of sand shown in the foreground.—*Congress Construction Co., Photo.*

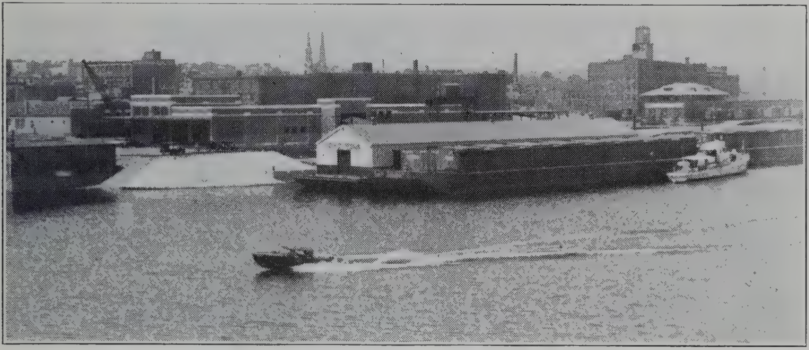
A 25-ton gasoline-operated locomotive crane with a 55-foot boom, and 1¼ cubic yard clam-shell bucket is provided for transferring freight directly between barge and car. This will be used for such commodities as coal, structural steel, steel pipe, sisal, and heavy packages and machinery.

Mooring space is provided for barges at the harbor line between the wharf barge and the end of the bulk terminal. There are four 19-pile clusters and three 12-pile clusters between the dock house and the bulk terminal and one 12-pile cluster above the bulk terminal. The 19-pile clusters are anchorage for the present and future wharf barges.

The terminal tracks are flood-lighted by four 1000-watt and three 1500-watt projectors on a 70-foot galvanized steel tower located at the north end of the dock house.

The Inland Waterways Corporation operating the Federal Barge Lines service on the Warrior and Mississippi rivers is operating the Peoria River and Rail Terminals. Semi-weekly service has been inaugurated between Peoria and all Mississippi River points. The city of Peoria will receive 15 cents a ton from the Federal Barge Lines for all freight passing through the terminals.

The accompanying photographs show the type of construction and the surrounding environment.



Peoria River and Rail Terminals—June 26, 1931. From the pilot house of the towboat "Wynoka" looking diagonally upstream showing the dock house and the wharf barge and cargo barges with the U. S. Navy submarine chaser at the right. —*Peoria Journal Photo.*

PUBLICATIONS FOR DISTRIBUTION BY THE DIVISION OF WATERWAYS.

Issued by the Rivers and Lakes Commission of Illinois, 1911–1916.

BULLETINS.

No. 1. The Conservation of Water Power in the DesPlaines and Illinois Rivers and the Improvements of these Rivers for Navigation. 1911.

No. 2. Prospectus of a project for a Deep Waterway and conservation of natural resources of the State of Illinois, prepared by Lyman E. Cooley. 1911.

No. 3. Uses of the Great Lakes. 1912.

No. 4* Land Drainage in Illinois, by Robert Isham Randolph. 1913.

No. 5. A compilation of money spent by the Government on various Harbors, Rivers and Canals, and the riparian property holders benefited. 1912.

No. 6. Argument on behalf of the State of Illinois supporting the prayer of the Sanitary District of Chicago for a permit to take 10,000 cubic feet of water per second from Lake Michigan, by Isham Randolph. 1912.

No. 7.* The 1912 Flood on the Lower Mississippi, by A. L. Dabney, Consulting Engineer, and "The 1912 Flood in the Ohio and Mississippi Rivers," by H. C. Frankenfeld. 1912.

No. 8. Proceedings of the organization meeting of the Association of the Mississippi Valley States for river control. 1912.

No. 9. The Illinois Water Power Waterway. 1912.

No. 10. The Illinois Waterway—a Guide for Navigators from Lake Michigan to the Mississippi River via the Chicago Sanitary and Ship Canal, the Illinois and Michigan Canal and the Illinois River. Also an Alternate Route via the Illinois and Mississippi Canal. Fifth edition. 1928.

No. 11.* European Harbor Development, by Robert R. McCormick. 1912.

No. 12.* Common Sense applied to the Inland Waterway Problem, by Robert R. McCormick. 1912.

No. 13. The Illinois Waterway, a Review, by Isham Randolph. 1912.

No. 14. Water Resources of Illinois—a cooperative report prepared by Rivers and Lakes Commission and A. H. Horton, District Engineer of the United States Geological Survey. 1914.

No. 15.* The Illinois Waterway—a project for a waterway of eight feet minimum depth between Lockport and Utica and available for immediate construction. 1914.

No. 16.* Stream Pollution and Sewage Disposal in Illinois with Reference to Public Policy and Legislation, by LeRoy K. Sherman. 1915.

No. 17.* Report of Survey and Investigation of LaMoine River, with Reference to Flood Control and Navigation.

No. 18.* Flood Control for Pecatonica River. 1916.

No. 19.* Projects for a Navigable Waterway from Southern Illinois Coal Fields to Mississippi River. 1917.

No. 20.* The Illinois Waterway Report, with plans and estimates of cost of a deep waterway from Lockport to Utica by way of the DesPlaines and Illinois Rivers. Internal Improvement Commission. 1909.

No. 21.* Surface Water Supply of Illinois. Internal Improvement Commission. 1908–1910.

No. 22. Report (and Plans*) for reclamation of lands subject to overflow in the Kaskaskia River Valley, Illinois. 1910–1911. Postage, 16 cents.

No. 23. Report from the prevention of overflow of the Little Wabash and Skillet Fork Rivers. 1911. Postage, 16 cents.

No. 24. The Illinois River and its Bottom Lands, by Alvord and Burdick. 1915. Second edition, 1919.

No. 24½. *Report, map and profile of Fox River. 1915.

Annual reports of Rivers and Lakes Commission. 1912,* 1913, 1914, 1915,* 1916.*

ISSUED BY THE

DIVISION OF WATERWAYS.

Successor to Rivers and Lakes Commission.

*First Annual Report. 1917–18.

Second, Third, Fourth, Fifth, Sixth, Seventh, Eighth, Ninth, Tenth, Eleventh, Twelfth, Thirteenth and Fourteenth Annual Reports. 1918–31, inclusive.

Saline River Report. 1920. (See Third Annual Report.)

Inland Waterways and Transportation Cost, by M. G. Barnes. 1920.

No. 25. Big Muddy River Report. 1922. (Also in Fifth Annual Report.)

No. 25½. Floods in Illinois. 1922. Causes, results and remedies. (Also in Fifth Annual Report.)

Pecatonica River Report. 1924. (See Seventh Annual Report.)

Report of the Interstate Harbor Commission of Illinois and Indiana on Harbor and Terminal Development at the State line between Illinois and Indiana, and in Chicago Industrial District. 1922.

No. 26. Calumet Lake and Chicago-Nickel Plate Agreement. 1926.

No. 27. Laws of Illinois relating to Waterways. 1926.

No. 28. National Aspect of Lakes-to-Gulf Waterway — Diversion of Waters from Lake Michigan—Boundary Waters, Treaty, etc. 1926.

No. 29. "Flood Control Report." 1929. An engineering study of the flood situation in Illinois, prepared under the direction of Wm. F. Mulvihill, Supervisor of Illinois Waterway Construction, and L. D. Cornish, Chief Engineer.

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* On file in office of Division of Waterways, Chicago. Supply for distribution exhausted.

For any of the foregoing publications, address Division of Waterways, 220 South State Street, Chicago, Illinois.

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FIFTEENTH ANNUAL REPORT

OF

DIVISION OF WATERWAYS

OF

THE DEPARTMENT OF PURCHASES AND CONSTRUCTION

July 1, 1931
TO
June 30, 1932

AUG. 26TH 1818

LOUIS L. EMMERSON, Governor
HENRY H. KOHN, Director
THOMAS WILLIAMSON, Assistant Director

BENJAMIN H. MILLER,
Supervisor of Illinois Waterway Construction

L. D. CORNISH, Chief Engineer.

Chicago Office, 220 South State Street

[Printed by authority of the State of Illinois.]

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NATURAL HISTORY SURVEY
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CENTER ROW: J. L. Southworth, J. E. Fulton, Arthur Kane, T. B. Casey, McDonald Smith, J. B. Grant, C. M. Briggs, L. C. Craig, Gunni Jeppesen; Tom Levan, Ralph S. Heath, Mark Lewis, Frank Kalteux, H. H. Jackson, John A. Walter and Wm. Ireland.

BACK ROW: Walter M. Smith, Jr., Merrill Townsend, A. A. Merica, A. M. Browde, A. S. Shay, Frank E. Kane, W. G. Potter, Chas. Hamilton, C. H. Thompson, M. C. Sjoblom and Geo. Brown.

WATERWAYS.

Benjamin H. Miller, *Supervisor.*

This is the fifteenth annual report of the Division of Waterways and covers in outline the work of this division, not only from July 1, 1931, to June 30, 1932, the end of the fiscal year, but the report also covers the work of this division from July 1, 1932, to December 1, 1932.

EXTENT OF JURISDICTION OF THE DIVISION OF WATERWAYS.

The law confers upon the Division of Waterways the powers, duties and jurisdiction formerly exercised by the Rivers and Lakes Commission, with especial reference to its jurisdiction over all rivers and lakes of the State of Illinois, to prevent pollution thereof or encroachments thereon; the powers and duties of the Illinois Waterway Commission with reference to the construction, operation and maintenance of the Illinois Waterway, and for the development and utilization of the water power thereof; and also the powers of the Illinois and Michigan Canal Commissioners for the control and management of the Illinois and Michigan Canal, the maintenance of the navigability thereof and the sale and lease of canal lands and property.

ILLINOIS WATERWAY.

The Act for the completion of the Illinois Waterway by the Federal government provided that from moneys in the Waterway Fund the State of Illinois should construct the highway bridges at Brandon Road and Marseilles Canal and to make the necessary alterations to other highway bridges across the Illinois Waterway.

In pursuance of this Act, the State of Illinois prepared plans and specifications for the construction of the necessary nine bridges across the Illinois Waterway. This work was prosecuted so vigorously that during the last fiscal year and up to and including December 1, 1932, contracts have been let by this division for the following bridges:

Jefferson Street Bridge, Joliet.
Jackson Street Bridge, Joliet.
Cass Street Bridge, Joliet.
McDonough Street Bridge, Joliet.
Brandon Road Bridge, south of Joliet.
Marseilles Bridge over Illinois River.
Marseilles Canal Bridge.
Smith's Highway Bridge near Channahon.
Hilliard Bridge, Ottawa.

There are two other highway bridges to be constructed over the Illinois Waterway, one at Seneca and one at Morris. These are to be built by the Highway Division of the State. The State Highway Division contributed the extra cost of widening the Cass and Jefferson Street bridges, both of which are located on State highway routes.

In addition to the above bridges, a contract for the temporary bridge at VanBuren Street, Joliet, was let and the bridge constructed to provide traffic facilities over the Illinois Waterway for the city of Joliet while other bridges were being constructed.

In response to a petition of the city of Marseilles and the county of LaSalle, who offered to pay a part of the cost, it was decided to build a new bridge across the Illinois River at Marseilles. Contracts have been let and this bridge will also be completed in the early spring of 1933.

The construction work on the above bridges was let under separate contracts for the different kinds of work; one contract for the substructure, one for the superstructure and one for the approaches. The work under these contracts is now in progress.

Two of the bridges, Jackson Street Bridge and Jefferson Street Bridge in Joliet, have been completed and opened for traffic. Cass Street Bridge will be completed and opened within a short time.

The only contracts remaining to be let by the State of Illinois under the provision of the Act of the Federal government taking over the Illinois Waterway, are the contracts for the substructure, superstructure and approaches to the Ruby Street Bridge, and the contract for the approaches to the McDonough Street Bridge.

Plans were completed and this division was prepared to advertise for letting contracts on Ruby Street Bridge in cooperation with the State Highway Division, early in December, 1932, but owing to the decision of the Federal government to change the course of the channel of the waterway at Ruby Street Bridge, these plans have been necessarily delayed until the Federal government makes its final decision in this matter, and if the channel is to be changed, the Federal government will acquire the additional right-of-way from the city of Joliet. The construction of the Ruby Street Bridge, however, will not delay the opening of the Illinois Waterway in the spring of 1933.

The temporary VanBuren Street Bridge will be removed shortly and the contracts that have been let for the other bridges over the Illinois Waterway will have progressed to such a point by the spring of 1933 that the remaining construction work will not interfere with the opening of the Illinois Waterway for the use of such waterway for barge traffic.

The approximate total cost of all the bridges built and to be built by the Division of Waterways in connection with the Illinois Waterway under said Act, exclusive of the cost of plans, specifications, supervision and damage to property, will be about $2,200,000.00.

The State has cooperated with the Federal government in every way for the completion of the Illinois Waterway program and in spite of delays due to injunctions, changes of plans, labor difficulties and other causes, has succeeded in carrying out its part of the program so that as far as the State is concerned, the State highway bridges will be sufficiently completed by April 1, 1933, so that commercial navigation of the waterway will be possible.

FLOOD RELIEF.

The Fifty-sixth General Assembly appropriated $1,849,229.47 to be expended in protecting the lands of the people of the State from the devastating effect of floods of Illinois rivers such as occurred in 1922, 1926 and 1927, and the unexpended portion of these appropriations was reappropriated by the Fifty-seventh General Assembly. This State aid has made it possible to secure Federal allotments for flood relief in Illinois, which allotments have amounted to $1,569,201.34. The balance of the State appropriations has been allotted and will be expended during the present administration and the total of Federal aid in cooperation with the State will amount to about $1,700,000.00, and combined State and Federal aid about $3,550,000.00.

Rivers are being straightened and levees constructed. Most of the work is finished. The remainder is under way, and when completed, either complete or partial protection against the ravages of future floods will have been obtained for over 300,000 acres of the most productive agricultural lands of the State, as well as protection for the lives and health of many thousands of our citizens.

WATERWAY EQUIPMENT SOLD.

When the Federal government passed the Act taking over the Illinois Waterway, construction operations by the State ceased and outstanding contracts were cancelled. As a consequence the State had in its possession a large quantity of equipment and material for which it had no further use. In order to provide additional funds for bridge construction the State advertised this equipment and material for sale and as a result the State sold part of the equipment and materials for $107,637.95 and received rentals of $12,000.00, all of which money as received was credited to the Waterway Fund.

REDUCTION OF EXPENDITURES.

Exclusive of the Illinois Waterway and Illinois and Michigan Canal, the standard and special appropriations of the Fifty-sixth General Assembly to the Department of Purchases and Construction for expenditures through the Division of Waterways amounted to $432,100.00. By efficient supervision and rigid economy the expenditures from these appropriations were held down to $294,502.00 and, therefore, $137,598.00, or 32 per cent of the appropriations, was saved to the public treasury. This saving is further reflected in the reduction of similar appropriations for the fifty-seventh biennium by the amount of $113,000.00. Thus the expenditures of carrying on the usual operations of this division for the four year period of this administration were reduced over 33 per cent, and the amount saved will be in excess of $250,000.00.

ILLINOIS AND MICHIGAN CANAL.

The operation and maintenance of this canal is an obligation of the Federal government upon the State of Illinois in connection with land grants made to the State for its construction.

This canal has been maintained in satisfactory navigable condition. While commerce on the canal is negligible, it is much used by small craft in passing between the Great Lakes and navigable waterways south of LaSalle.

This canal is self-supporting and the expenses of maintenance and operation are derived from the receipts from lockage fees and rentals of canal property. From January 1, 1929, to June 30, 1932, the receipts exceeded the expenditures by $29,436.42, and on June 30, 1932, the Illinois and Michigan Canal Fund amounted to $97,822.28.

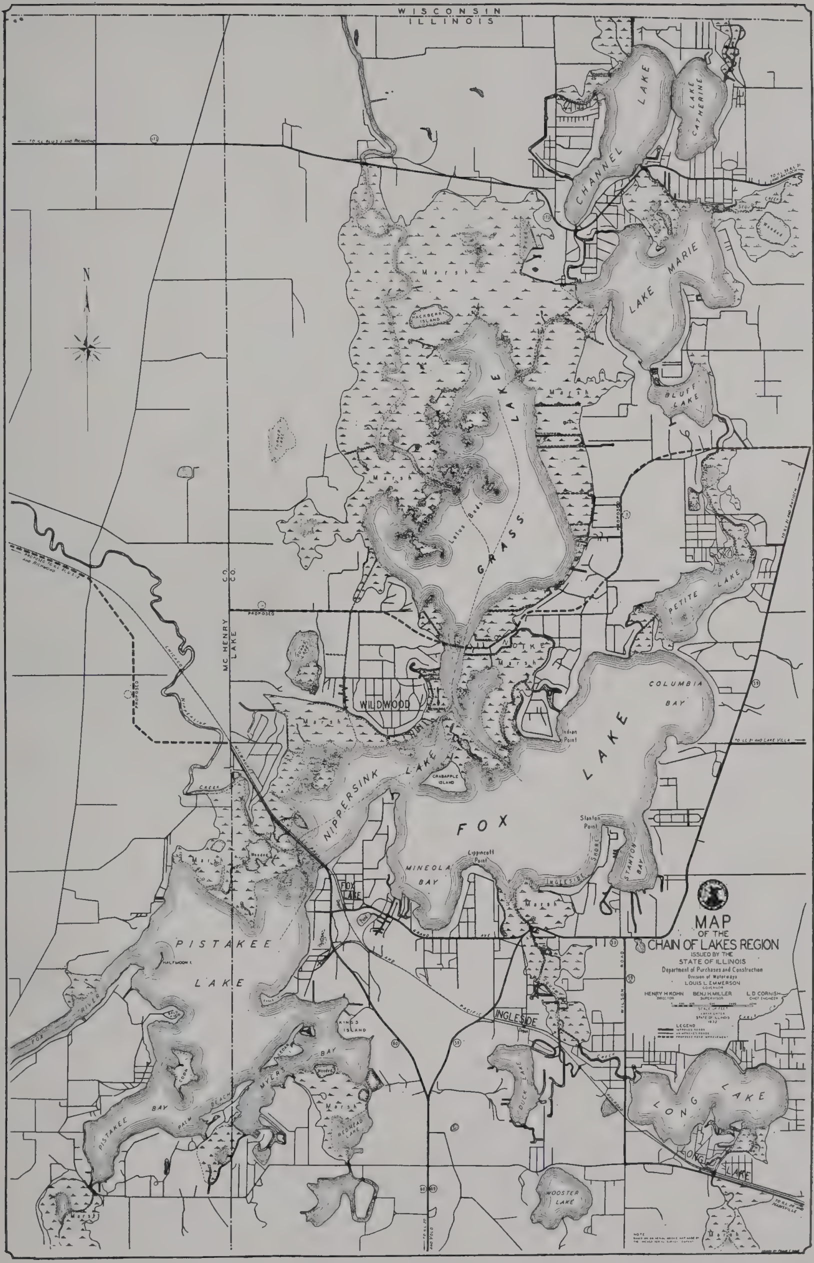
Lands purchased for Illinois Waterway purposes were rented pending their need of being overflowed, and collections from such rentals credited to the Illinois Waterway Maintenance fund amounted to $11,331.39.

With the completion of the Illinois Waterway the Illinois and Michigan Canal will no longer be needed for navigation purposes and will probably be abandoned for such purposes. As the canal and the 90-foot strip of land on either side was granted to the State by the United States for canal purposes only, an Act of Congress is necessary to vest absolute title to the canal lands in the State in order that the State may dispose of these lands as it sees fit, and from the moneys derived from the sale thereof be reimbursed as far as possible for the $20,000,000.00 expended by the State towards the cost of the Illinois Waterway.

IMPROVEMENT OF FOX RIVER AND FOX LAKE.

The Fifty-seventh General Assembly, under House Bill No. 73, appropriated the sum of $25,000.00 for the purpose of improving navigation in the Fox River between Burton's Bridge and the north limits of the city of McHenry. Under this appropriation the Division of Waterways, in June, 1932, advertised for bids for the deepening and widening of the channel in the Fox River between Burton's Bridge and the McHenry Dam, and in pursuance of such bids let a contract for the construction of a channel between said points of an average width of 50 feet and a depth of at least 4 feet below the low water of 1931. This work has been completed at a cost of $22,800.00 and has made possible the navigation of the Fox River by small water craft from the Wisconsin boundary line to Burton's Bridge.

In addition to the above improvement there was expended during the past year from the appropriation for "Maintenance of Navigation on Illinois Rivers" the sum of approximately $800.00 for dredging channels and cutting weeds in Pistakee Lake, Fox Lake and the Fox River, and also the sum of $1,000.00 for procuring an aerial survey and map of the entire Fox Lake region, extending from the Wisconsin Line south to the southerly boundary of Pistakee Bay. No accurate map of this region was in existence and this map was necessary for the purpose of showing the exact location of the lakes, rivers and channels in this region. The survey and map were made by the Chicago Aerial Survey Company. Reprints of the map have been made and can be obtained at the office of the Division of Waterways, Room 1510, 220 South State Street, Chicago, Illinois.



MAP OF CHAIN OF LAKES REGION.
Based on airplane survey by Chicago Aerial Survey Co.

ENGINEERING REPORT.

By L. D. Cornish, *Chief Engineer.*

July 1, 1931, to November 30, 1932.

THE ILLINOIS WATERWAY.

The Federal government having taken over the completion of the waterway early in 1931, construction work by the State during the period covered by this report has been confined to the design and construction of the highway bridges over the waterway between Lockport and Starved Rock.

The Highway Division of the State is constructing entirely with highway funds the Seneca and Morris bridges and contributing part of the costs of the construction of the Ruby, Jefferson and Cass Street bridges in Joliet and the Hilliard Bridge at Ottawa.

In 1931 the U. S. War Department announced its intention of completing the waterway construction program by October 15, 1932 and requested that the State complete its bridges to such an extent that the waterway could be officially opened to navigation by that date. This Department agreed to cooperate and changed its construction program to include the simultaneous erection of three bridges in Joliet and it appeared that no difficulty might be experienced in meeting the request of the Federal government for the completion of all essential work so that the waterway could be opened October 15, 1932.

Unfortunately this program was made impossible by the results of a "Prevailing Wage Act" which became a law under the Fifty-seventh General Assembly and by injunctions obtained by the cities of Marseilles and Joliet which restrained the State from commencing the construction of certain bridges.

On July 7, 1931, the "Prevailing Wage Act" became a law and bids which had been received just prior to that date had to be rejected. New bids were received under the new Act but before contracts could be awarded the constitutionality of the Act had been questioned by the courts and the matter had to be passed upon by the Supreme Court of the State, which court finally declared the Act invalid. During the period that the matter was before the courts no contracts could be awarded and a total of about five and one-half months time was lost.

The construction activities of the division have been completely covered in considerable detail in the reports of Walter M. Smith, assistant chief engineer, Gunni Jeppesen, bridge engineer, and John H. Walker, division engineer in charge of construction, which reports appear elsewhere in this volume, and the writer takes this opportunity in expressing his appreciation of the splendid cooperation of these engineers and also of Mr. Chauncey M. Briggs. Their thorough and enlightening reports are excellent indications of the thoroughness with which they carried out their duties which were made unusually difficult because of the many changes in plans and construction necessitated by the unavoidable delays for which this division was in no way responsible.

The routine activities of the division covering encroachments, pollution, permits and the Illinois and Michigan Canal are fully covered in the reports of Mr. Smith, Mr. Potter, Mr. Sjoblom and Mr. Walter which appear in this volume.

The Illinois Waterway will unquestionably be completed and opened to traffic about April 1, 1933, which event automatically invites the attention of the people of the State and the State administration to three important problems requiring immediate attention.

With the new waterway open to traffic the Illinois and Michigan Canal is no longer needed and should be abandoned and its right-of-way put to some useful purpose.

The valuable State Waterway Terminal property acquired in 1928 should be improved and utilized for the purpose for which it was acquired.

The dams of the waterway have created some 90,000 horsepower of potential energy worth many millions of dollars to the State which should not be allowed to go to waste.

The writer will conclude his report by a brief review of each of these problems.

ILLINOIS AND MICHIGAN CANAL.

The State acquired the right-of-way for this canal from the Federal government under the Federal Act of 1822, which Act provided that in the event the State abandon the canal the right-of-way thereof would revert to the Federal government.

The canal was completed in 1848 and since that date has been maintained and operated out of its own earnings. During the past three years the receipts from rentals of canal property have averaged $33,000.00 per annum. The expenses of maintaining and operating have averaged about $24,000.00 per annum, and during the past thirteen years the unexpended balance in the Special Illinois and Michigan Canal Fund had accumulated to an amount of $97,822.28 as of June 30, 1932.

The destruction of the water power dam at Jackson Street, Joliet, by the Federal government within the next three months will eliminate the water power rentals for that property which amount to $10,000.00 per annum. Other rentals amounting to about $2,000.00 per annum will also be lost, consequently the receipts from the canal will be less than the expenditures and no useful purpose can be served by operating the canal as a waterway.

Inasmuch as the State of Illinois directly and through the Sanitary District of Chicago, has expended in excess of $80,000,000.00, and with a small appropriation from the Federal government will have completed a modern waterway paralleling the Illinois and Michigan Canal and said waterway will be in operation by April, 1933, a perpetually maintained and operated waterway as contemplated in the Act of 1822 will forever be assured. It would appear, therefore, that the State of Illinois should be relieved of any obligation to operate and maintain the Illinois and Michigan Canal as a navigable waterway and should be permitted to abandon same and utilize the lands for other purposes. As the ownership of a right-of-way under the present laws would be a subject of dispute in the event the canal were abandoned as a waterway, only two methods could determine the ownership of the canal, namely a decision of the Supreme Court of the United States or an Act of Congress.

It is believed the best and undoubtedly the quickest method of deciding this matter would be by an Act of Congress by which the Federal government would waive any rights which it might have in the right-of-way and permit the abandonment of same.

If the State should become possessed of the undisputed title to the right-of-way, which includes a 90 foot reserve on each side of the canal, which is 60 feet wide, these lands, particularly in the city of Chicago, could be improved in value by filling the canal and by permitting the city of Chicago to dispose of its cinders, street sweepings and other material suitable for fill. This would benefit the people to a very material amount, estimated by the city authorities to equal in excess of $200,000.00 per year.

Under present laws the State can only lease these lands for a maximum of ten years and such leases must be subject to cancellation within one year, consequently lessees cannot be secured who will place improvements upon the property. If the State secures ownership to the fee of the land, suitable State laws could be enacted which would provide for long term leases or for the sale of such lands, as public interest might indicate as desirable.

The State, by the Act of 1827 acquired the fee title to the odd numbered sections for five miles on each side of the canal, which acreage as now occupied by the right-of-way of the canal and its feeders, aggregates 1,949 acres. Similar acreage in the even numbered sections, the title to which is not entirely clear, amounts to 1,707 acres.

It is recommended that suitable legislation be prepared for action by the Congress of the United States to give to the State of Illinois undisputed fee title to the right-of-way of this canal.

HYDRO-ELECTRIC POWER.

DEVELOPMENT BY THE STATE.

Funding of the cost of the waterway can be assured by the production and sale of electrical energy developed as a by-product of navigation. A license has been issued by the Federal Power Commission for the State of Illinois to construct and operate three stations, the dams are completed, including the headgate structures of the power plants, and the pools will be filled and opened to navigation by the summer of 1933. Power will be available merely by construction of the power houses.

In 1908, when the present waterway plan was under discussion, its proponents promised the people of the State that the project would repay the State handsomely in cash from tolls and from the sale of power in addition to the benefits to industrial development from improved transportation. With construction costs at pre-war levels and the diversion from Lake Michigan undiminished, the undertaking would probably have been as lucrative as pictured by its most ardent advocates. The picture has changed.

The estimates of 1910 did not contemplate the inflated values of right-of-way or increased cost of construction produced by the war and the $20,000,000.00 lacked about $4,000,000.00 necessary to finish the project.

The War Department has completed the waterway and has taken over its operation. This precludes the anticipated income to the State from tolls, the charging of which, however, has never been considered seriously during the past fourteen years. After protracted litigation, the Supreme Court of the United States has materially reduced the limit of diversion of water from Lake Michigan, thus depriving the State of a large portion of the anticipated income from power. What power remains, however, can liquidate the proposed power plants in less than six years and pay for the entire waterway in less than fifty years.

The Waterway Act authorizes the State to develop the power and sell same or to lease the water, allowing the lessee to bear the cost of construction. The Act also provides for the revaluation of the rental every ten years.

The State therefore has a choice of two ways of disposal of the power to be developed under the license. Careful analysis develops definite conclusions regarding the proper course to be taken under the law.

The Economy Power and Light Company of Joliet has had leasehold rights to the waterflow at Jackson Street, Joliet, for many years. Their payments are based on a flow of not less than 300,000 cubic feet per minute. The head is a minimum of 8½ feet. This represents a theoretical 4,850 horsepower. The average head is a little better and the flow nearly twice the contracted amount. The State receives $10,000.00 per year for this power and the plant developed in its best year 23,000,000 kilowatt hours, an average of 2,700 kilowatts with a demand of 3,300 kilowatts. This shows that the income to the State is less than ½ mill per kilowatt hour on power actually delivered at the buss bar, and much less than that for potential power.

Using the same basis, the income from the sale of water at Brandon Road would be about $35,000.00 per year if it were possible to find a private corporation which would lease the water and construct the power plants. At present there is no market for public utilities securities and it is very doubtful if any private interests could finance any improvement of their operating plants, to say nothing of new construction. Even were securities marketable it is extremely doubtful if any corporation would invest in any development where a revaluation is required by law every ten years.

By construction of the plant at Brandon Road the State will have power to sell at the buss bar without risk of capital to the private investor. The plant which was constructed at Dayton, Illinois, on the Fox River, under a license to which the State was a party, sells stream run power to the public service corporation at 5 mills per kilowatt hour. On this basis the Brandon Road plant would produce a net income to the State of $723,708.00 per year during the years of 1934 and 1935, which would pay for the plant in those two years, while after 1938 it would produce a permanent net income of $297,000.00 per year. Even assuming the sale at 4 mills per kilowatt hour the permanent income would be over $200,000.00 per year, the plant having paid for itself in less than three years.

The plants at Dresden Island and Starved Rock at 4 mills would produce a permanent income of $197,000.00 and $122,000.00 per year respectively, while all three projects would pay for themselves in less than six years from completion of the first plant. Furthermore, as there is some small storage available behind the dams sufficient for daily peaks, the power should bring better than 4 mills per kilowatt hour.

It is of little moment that the demand on the public service plants is at present considerable below their capacity. The cost of power at the buss bar and its availability for meeting peak demands which makes hydraulic power much more desirable under normal conditions makes it doubly so under adverse conditions.

As mentioned in the report of Mr. C. M. Briggs elsewhere in this volume, the plans and specifications on the Brandon Road project could be ready for advertisement for bids in thirty days. The sale of power could be similarly advertised and the exact income to the State could be ascertained with certainty at once.

Water is the only natural resource of this nation which is perpetual. Now that the dams are constructed the water of the Illinois Waterway is potential power which belongs to the people of this State. Should this valuable power be permitted to run to waste or should it be developed and used to turn the wheels of industry and return to the people a perpetual income to lessen their burden of taxation? The answer seems obvious.

RECOMMENDATION.

It is recommended that immediate action be taken to place this program under construction as the income during the years of large diversion will be very large and a delay of one year will represent a loss to the State of over one million dollars.

The important reasons for immediate action are:

First—Produce a revenue to bring a return on the investment in the waterway.

Second—Provide power for operation of locks and bridges.

Third—Reduce unemployment by construction of a self-liquidating project.

Fourth—Conserve a natural resource.

Fifth—Improve the operating conditions in the local power pools.

Sixth—Aid industry and other power consumers by helping to reduce the cost of electrical energy.

Seventh—Under the terms of the license it will be necessary for construction of the first plant to be started during the year 1933.

STATE BARGE TERMINAL AT CHICAGO.

The opening of the Illinois Waterway will bring barge traffic to Chicago by April, 1933. To date little private and no public preparation has been made for terminal facilities to handle river commerce. A large portion of the shipments will be package freight destined for rail transfer or truck delivery in either direction. The State has acquired what is probably the most desirable site in Chicago for combining the facilities to meet the requirements of such a terminal, between Ashland and Damen avenues on the south side of the juncture of the Sanitary Canal with the Chicago River. The description of the property and manner of its acquisition are shown in the twelfth annual report of the Division of Waterways.

The Inland Waterways Corporation desires to lease this site at their standard fee of 15 cents per ton of cargo handled through the terminal, provided the State will erect suitable transfer warehouse facilities.

According to the property transfer agreement, when the State takes over the property for terminal purposes, the Santa Fe Railroad is obligated to pay to the State $200,000.00 to use in making the necessary water terminal improvements. With the necessary legislation this fund would become available and should be sufficient for the project.

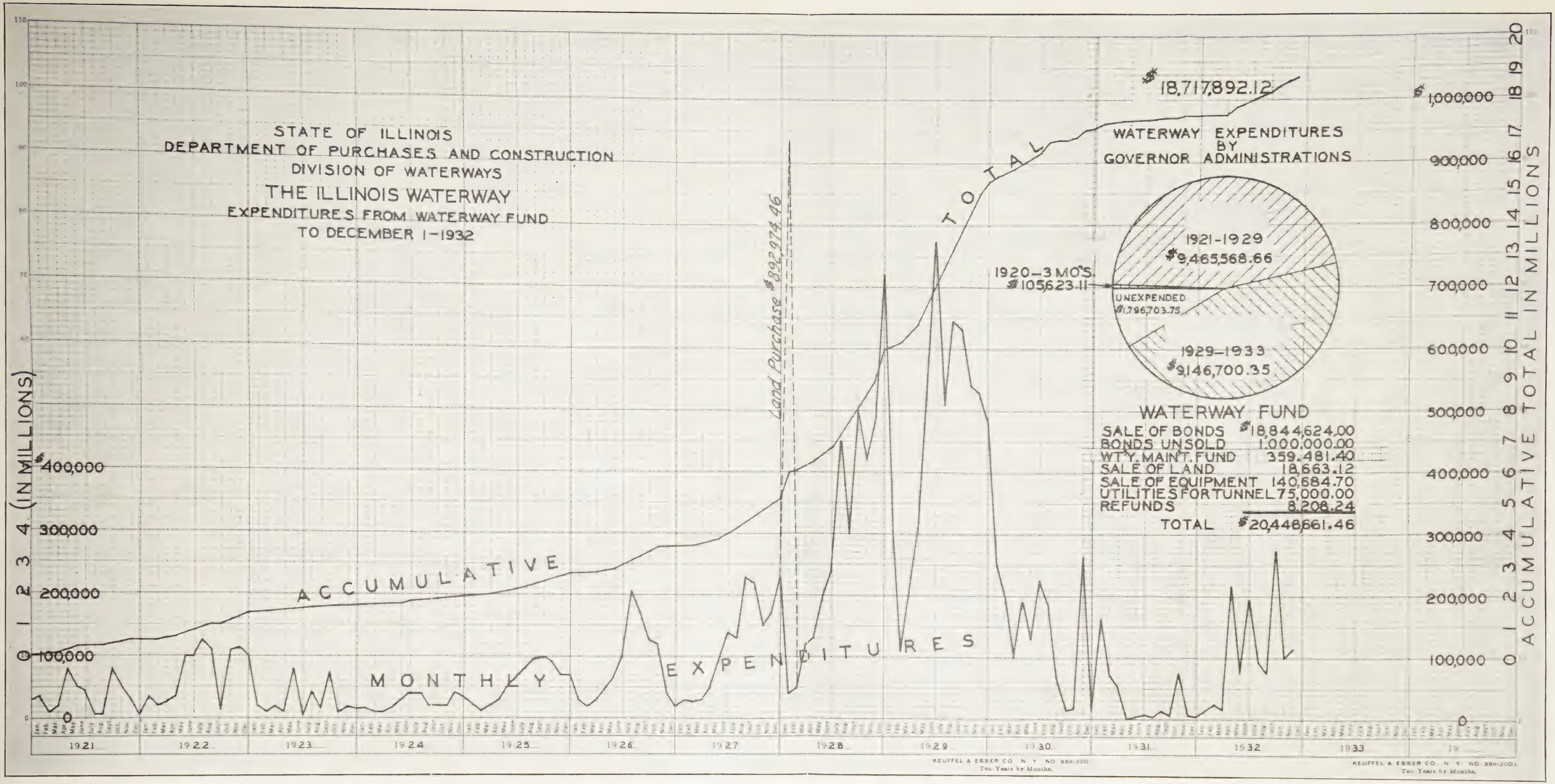
The river having little fluctuation makes the design simple and economical as compared to most river terminals, and the Inland Waterways Corporation will furnish its own motive transfer equipment. Preliminary plans have been prepared for the terminal to be constructed at an estimated cost of about $150,000.00. The Inland Waterways Corporation has these plans under consideration relative to making a formal tender to the State for lease of the site.

The State should proceed with the development of this terminal along the lines indicated and the required procedure would be as follows:

1. The procuring of the necessary State legislation.
2. Formal execution of agreement with the Inland Waterways Corporation.
3. The preparation of a lease agreement between the Inland Waterways Corporation and the State covering the construction referred to and the fee for the use of the terminal.
4. The completion of the plans, specifications and accurate estimate of cost of the structures to be built, which would consist of a covered shed along the Santa Fe Slip with a storehouse at one end and the depressing of certain railroad tracks to facilitate transfer of cargoes.
5. The submission of said agreement and report from the chief engineer for action by proper State authorities, and if said authorities decide to make the improvement, then
6. Make the formal demand upon the Santa Fe Railroad for the State to take possession of the site and for the payment to the State of the $200,000.00 covered in the agreement with the railroad.
7. Advertising for bids and letting of contract for the construction.

EXPENDITURES FROM THE ILLINOIS WATERWAY FUND FROM OCT. 19, 1920, TO DEC. 1, 1932.

Fiscal year ending June 30.	Structures, including labor.	Cement for structures.	Permanent plant and equipment.	Land and property damage.	Engineering inspection, etc., payrolls.	Office expense.	Miscellaneous and incidental expense.	Travel expense.	Bridges, including damages.	Yearly totals.
1921	$ 182,752 49			$ 92,671 95	$ 28,490 00					$ 303,914 44
1922	430,896 93		$ 78 55	145 30	61,789 48	$4,057 59	$ 539 79	$1,675 01		499,182 65
1923	604,502 59		92 78	2,229 65	66,227 86	708 55	3,165 02	4,313 26		681,239 71
1924	170,833 02		23 50	39,484 60	69,495 22	681 30	1,011 36	1,607 65		283,136 65
1925	311,521 78	$ 39,440 70		14,958 20	39,163 87	1,711 56	204 30	299 94		407,300 35
1926	585,813 30	121,079 40	414 81	37,808 80	47,686 78	699 91	5,810 13	3,272 27		802,585 40
1927	897,992 42	94,344 50	349 77		74,174 28	761 75	14,389 28	3,027 24		1,085,039 24
1928	1,580,539 55	185,437 20	594 70	902,941 20	122,555 02	700 40	28,758 34	6,027 18		2,827,553 59
1929	3,681,316 85	327,097 63	280,737 61	490,611 80	182,106 56	2,453 19	38,406 96	8,249 87	$ 225,000 00	5,235,980 47
1930	3,798,082 27	336,209 90	61,128 61	7,632 75	169,635 08	6,010 15	12,813 06	8,051 31		4,399,563 13
1931	824,639 24			978 00	29,002 82	2,597 99	4,753 89	2,828 43	8,599 14	873,399 51
1932	62,000 00			4,507 69	93,066 05	3,182 40	10,459 39	7,266 17	1,138,515 28	1,318,996 98
Total	$13,130,890 44	$1,103,609 33	$343,420 33	$1,593,969 94	$983,393 02	$23,564 79	$120,311 52	$46,618 33	$1,372,114 42	$18,717,892 12



STATE OF ILLINOIS
DEPARTMENT OF PURCHASES AND CONSTRUCTION
DIVISION OF WATERWAYS
THE ILLINOIS WATERWAY
EXPENDITURES FROM WATERWAY FUND
TO DECEMBER 1-1932

WATERWAY EXPENDITURES BY GOVERNOR ADMINISTRATIONS

WATERWAY FUND

SALE OF BONDS	$18,844,624.00
BONDS UNSOLD	1,000,000.00
WT'Y. MAIN'T. FUND	359.481.40
SALE OF LAND	18,663.12
SALE OF EQUIPMENT	140,684.70
UTILITIES FOR TUNNEL	75,000.00
REFUNDS	8,208.24
TOTAL	$20,446,661.46

ANNUAL REPORT OF ENGINEERING ACTIVITIES.

By WALTER M. SMITH, *Assistant Chief Engineer.*

BRIDGES.

A description of the various bridges being constructed or contemplated is given in the report of Mr. Gunni Jeppesen, bridge engineer, and the program of construction by Mr. J. H. Walker, division engineer. A summary of the various contracts for bridge construction follows:

CONTRACT B-1—TEMPORARY BRIDGE—VANBUREN STREET, JOLIET.

Proposals for this contract were opened on July 7, 1931, but owing to the "Wage Rate Bill," requiring that specifications state the minimum rate of wages to be paid for various classes of labor, having been signed by the Governor before the proposals were opened, all bids had to be rejected. The contract was readvertised complying with the wage rate bill but before date set for opening of proposals, the Wage Rate Law was held to be unconstitutional by Judge Briggle of the Circuit Court and the contract was held in abeyance until the law was passed upon by the Supreme Court. This court also held the law unconstitutional. Prospective bidders were then instructed to send in their proposals without stating rates of wages. Proposals were opened on November 24, 1931. The canvass of bids is shown in Table No. 1.

The contract was awarded to the low bidder, Green & Sons Co., and an agreement was made with them to substitute the alternative design of The Kelly-Atkinson Co., for the State design. The bridge was finished in record time and thrown open to traffic February 29, 1932.

CONTRACT B-2—SUBSTRUCTURE AND APPROACHES, MARSEILLES CANAL BRIDGE.

Proposals were called for on this contract to be opened on November 24, 1931. The canvass of bids is shown in Table No. 2.

The contract was awarded to the low bidder, the Congress Construction Co., but before being signed work was held up by an injunction obtained by the city of Marseilles objecting to the design. This injunction was not lifted until July, 1932, when the State agreed to build a bridge across the river also connecting with the canal bridge as desired by the city. Work then proceeded and the work is completed, except the paving of the approaches and cleaning up.

CONTRACT B-3—SUPERSTRUCTURE FOR MARSEILLES CANAL BRIDGE.

Proposals were called for on this contract on the same date as for contract B-2. The canvass of bids is shown in Table No. 3.

The contract was awarded to the low bidder, the International Steel and Iron Co., Evansville, Ind., but before it was signed it was held up by the same injunction as contract B-2. The company, however, went ahead and prepared and submitted a set of contract drawings. When the injunction was lifted in July, 1932, this company had gone into the hands of a receiver. Arrangements were made with the Mississippi Valley Structural Steel Co., of Decatur, Illinois, to take over the Contract at the same price as bid. At present, the lower chord and steel floor system has been erected and work is beginning on erection of the trusses.

CONTRACT B-4—SUPERSTRUCTURES JACKSON AND JEFFERSON STREET BRIDGES, JOLIET.

Proposals were first called for on this contract to be opened on August 25, 1931, but before this date, had to be delayed on account of the above mentioned Circuit Court decision that the Wage Rate Law was unconstitutional. They were, therefore, held in abeyance until the decision of the Supreme Court. They were then opened on November 24, 1931. The canvass of bids is shown in Table No. 4.

The contract was awarded to the low bidder, the Mississippi Valley Structural Steel Co. Due to various causes, the contract was not signed until the latter part of February, 1932. Both of these bridges are now practically complete, except for installation of electric power. The contractors did not furnish the grade of steel called for in the turned bolts for holding the machinery in place, the steel being too brittle. It will be necessary to have them furnish bolts of the grade called for to replace those furnished.

CONTRACT B-5—BRANDON ROAD BRIDGE.

This contract was advertised and proposals opened at the same time as contract B-4. The canvass of bids is shown in Table No. 5.

The contract was awarded to the low bidder, the Independent Bridge Co. of Pittsburgh, Pa. This bridge which was thrown open to traffic in August, has been finished, tested and accepted, except the question of substituting new machinery bolts the same as contract B-4.

CONTRACT B-6—SUBSTRUCTURE JACKSON, CASS AND JEFFERSON STREET BRIDGES.

Proposals were called for on this contract to be opened on January 12, 1932. The canvass of bids is shown in Table No. 6.

The contract was awarded to the low bidder, the Powers-Thompson Construction Co., Joliet. The contract was satisfactorily completed by the date called for September 15, 1932.

CONTRACT B-7—SUBSTRUCTURE SMITH'S HIGHWAY BRIDGE.

Proposals were called for on this contract to be opened on May 10, 1932. The canvass of bids is shown in Table No. 7.

The contract was awarded to the low bidder, the Powers-Thompson Construction Co., Joliet.

The contract was completed about September 15, 1932.

CONTRACT B-8—SUPERSTRUCTURE FOR SMITH'S HIGHWAY BRIDGE.

Proposals were called for on this contract to be opened on July 12, 1932. The canvass of bids is shown in Table No. 8.

The contract was awarded to the low bidder, the Mississippi Valley Structural Steel Co. The time of completion of this contract as called for is January 6, 1933, but the contractors have set a date of April 1, 1933, which may interfere with the government's program of opening the waterway on March 1, 1933. Erection of the viaduct approach on the north side of the river was begun about November 20, 1932.

CONTRACT B-9—CASS STREET BRIDGE SUPERSTRUCTURE.

Proposals for this contract were called for at the same time as contract B-4 and were subject to the same delays and were opened on the same date November 24, 1931. The canvass of bids is shown in Table No. 9.

The low bidder on this contract John C. Paskins Co., failed to qualify satisfactorily and the second lowest bidder, the Mississippi Valley Structural Steel Co., did not want the contract, as they had just been awarded contract B-4, therefore, the contract was awarded to the third lowest bidder, the Independent Bridge Co.

The same trouble has occurred at this bridge with the turned bolts for the machinery as at Jackson and Jefferson Street Bridges as they were all furnished by the same sub-contractor. With the exception of these bolts, the bridge will be completed about December 15, 1932.

CONTRACT B-10—SUBSTRUCTURE AND APPROACHES, HILLIARD BRIDGE, OTTAWA.

Proposals for this contract were called for to be opened on August 30, 1932. The canvass of bids is shown in Table No. 10.

The contract was awarded to the low bidder, the Macdonald Engineering Co., of Chicago. Excavation only has been done to date, being completed for the south abutment.

CONTRACT B-11—SUPERSTRUCTURE, HILLIARD BRIDGE, OTTAWA.

Proposals for this structure as designed by the State engineers, were submitted, also a proposal on an alternative cantilever design was submitted by the Independent Bridge Co., of Pittsburgh. This design while costing about 15 per cent more than the simple truss design of the State engineers was so much better suited to the unusual conditions at this site, that it was decided to reject all bids, adopt the cantilever design and call for proposals on that design. In calling for these proposals the bidders were required to attach a letter to the envelope containing the proposal stating that they would pay the rate of wages listed in the contract under pain of not having their proposals opened if this provision were not complied with. Several firms refused to comply with this condition claiming that it was illegal and that if their proposals were not opened they would take legal steps to compel the opening and considering of their proposals.

The question was referred to the Attorney General who ruled that the condition imposed was illegal. The proposals in question were then opened. On account of the uncertain legal status of a contract let under these conditions it was decided to reject all bids and readvertise the contract. Accordingly new proposals were called for to be opened on November 4, 1932. The canvass of bids is shown in Table No. 11.

The contract was awarded to the low bidder, the Wisconsin Bridge and Iron Co., of Milwaukee, Wisconsin.

CONTRACT B-12—SUBSTRUCTURE MCDONOUGH STREET BRIDGE.

Proposals were called for on this contract to be opened on August 16, 1932. The canvass of bids is shown in Table No. 12.

The contract was awarded to the low bidder, the Powers-Thompson Construction Co., Joliet. The city of Joliet secured an injunction delaying the starting of work on this contract for a short time, but the injunction has been vacated and the work is now well under way and will be sufficiently completed to not delay the opening of the waterway on March 1, 1933.

CONTRACT B-13—JEFFERSON STREET BRIDGE APPROACHES.

Proposals were called for on this contract to be opened on August 30, 1932. The canvass of bids is shown in Table No. 13.

As will be seen only one proposal was submitted, that of the Powers-Thompson Construction Co., of Joliet. As prices submitted were satisfactory, the contract was awarded to the bidder and the work has been completed, except a small amount of embankment and cleaning up.

CONTRACT B-14—CASS STREET BRIDGE APPROACHES.

Proposals were called for on this contract to be opened on August 30, 1932. The canvass of bids is shown in Table No. 14.

The contract was awarded to the low bidder, the Powers-Thompson Construction Co., of Joliet.

The work is completed on the west approach, but is not yet completed on the east side of the river.

CONTRACT B-15—SUPERSTRUCTURE MCDONOUGH STREET BRIDGE.

Proposals were called for on this contract under the same conditions as to wage rates as contract B-11 for the superstructure of the Hilliard Bridge and were rejected when the ruling of the Attorney General was obtained. New proposals were called for to be opened on November 4, 1932. The canvass of bids is shown in Table No. 15.

The contract was awarded to the low bidder, the Mississippi Valley Structural Steel Co. Work has been started on the shop drawings.

CONTRACT B-19—OPERATOR'S HOUSES FOR JOLIET BRIDGES.

Proposals were called for on this contract to be opened on May 10, 1932. The canvass of bids is shown in Table No. 16.

The contract was awarded to the low bidder, the Schmidt Bros. Construction Co. The houses at Jackson, Jefferson and Cass Street bridges are now being constructed, the one at Jackson Street being completed.

CONTRACT B-20—SUPERSTRUCTURE ILLINOIS RIVER BRIDGE, MARSEILLES.

Proposals were called for on this contract to be opened on July 12, 1932. The canvass of bids is shown in Table No. 17.

The contract was awarded to the low bidder, the Mississippi Valley Structural Steel Co. The fabrication of the steelwork is 35 per cent completed.

Arrangements were made with the Congress Construction Co., the contractors for the substructure of the bridge across the canal, to construct the substructure of this bridge as an extension of their contract as they submitted satisfactory prices, thus saving considerable time.

CONTRACT B-23—REMOVAL OF TREAT'S ISLAND AND SMITH'S HIGHWAY BRIDGES.

Proposals were called for on this contract to be opened on September 20, 1932. The canvass of bids is shown in Table No. 18.

The contract was awarded to the low bidder, the Joliet Bridge and Construction Co.,

Treat's Island Bridge has been removed and the U. S. engineers have ordered Smith's Bridge to be removed by March 1, 1933. It will be kept in operation as long as possible on account of the great inconvenience its removal will cause until the new Smith's Bridge is completed.

Mill, shop, foundry and machine shop inspection on the superstructure of the bridges has been done by the Pittsburgh Testing Laboratories or the Robert W. Hunt Co. Erection has been under the supervision of the State's inspectors, who collaborated on the movable bridges at Joliet with inspectors of the Scherzer Rolling Lift Bridge Co.

LOCKS AND DAMS.

When the lock and dam work of the Illinois Waterway was turned over to the U. S. War Department, the engineers of the department were uncertain as to the quality of the concrete in the structures which are all built of bank run gravel. At Dresden Island Lock and Dam where much concrete work remained to be done, the bank run gravel being used was deficient in quantity of sand causing the concrete to be somewhat light and porous. The State engineers decided not to go to the expense of importing sand to add to the gravel as it would increase the cost to the State materially and while it would add slightly to the weight and density of the concrete would add little if anything to its strength. The government engineers thought it advisable to add some sand to the gravel and tried out a great many different proportions and made a great many test cylinders during the calendar year 1930. A careful record of all tests were kept and it was found that for the time that tests were carried on with cylinders with and without addition of sand, no gain in strength was shown for the addition of sand.

The War Department engineers also decided to make tests of the strength of the concrete in the various locks built by the State.

They therefore bored down about 10 feet into the concrete at various places in the various locks securing cores 6 inches in diameter. Test cylinders were then cut from these cores and tested. Nineteen test cylinders were made at Lockport Lock. The lowest strength shown was 3,117 lbs. per square inch, the highest 7,874 lbs. and the average 5,746 lbs. This concrete was about seven years old when tested. Fifteen (15) test cylinders were made at Brandon Road Lock. The lowest strength shown was 3,915 lbs. per square inch, the highest 6,913 lbs. and the average 5,228 lbs. This concrete was about three and one-half years old when tested.

Eleven (11) test cylinders were made at Marseilles Lock. The lowest strength shown was 2,779 lbs. per square inch—the highest 7,666 lbs. and the average 4,975 lbs. This concrete was about ten years old when tested.

Fifteen (15) test cylinders were made at Starved Rock Lock. The lowest strength shown was 3,510 lbs. per square inch, the highest 7,689 lbs. and the average 5,038 lbs. This concrete was about five years old when tested. The lowest of all the cylinders tested was 2,779 lbs. per square inch, the highest 7,874 lbs. and the average 5,295 lbs.

When the valves at Brandon Road were removed for overhauling before putting the lock in operation, one of the roller pins 7 inches in diameter was found to be broken although it had never been under stress. The pin was submitted to the Robert W. Hunt Co., who were the inspectors on this work for report. After investigating the matter thoroughly they reported that the pin was injured by heat treating the entire pin instead of only the surface as called for. A copy of this report was submitted to the War Department engineers for their information.

TESTS OF FILLING AND EMPTYING OF LOCKS.

The War Department engineers have recently tested the filling and emptying of Lockport and Starved Rock locks, the assistant chief engineer of the Division of Waterways being present.

The tests show that it takes slightly longer to fill and empty the locks than was expected, the time of a boat passing through the lock being increased from one to two minutes. However, the effort to eliminate all surging in the lock is completely successful and the time gained in not having to thoroughly tie up a tow passing through will more than offset this loss in time of filling or emptying.

At the recent test at Starved Rock Lock a tow of two large lighters and a towboat, all in line, with a total length of about 250 feet was locked through upstream. The tow was held to the wall by one line at the upstream end and one at the downstream end and both of these lines remained slack throughout the entire time of filling. Only twenty minutes elapsed from the time the tow passed the lower gate going in until it passed the upper gate going out and a part of this time was consumed after the upper gate was opened by the towboat taking in water. Starved Rock Lock has been in operation for several months and over one hundred and fifty lockages have been made, all of them by hand operation of the valves, until very recently when electrical equipment has been installed.

HYDRO-ELECTRIC PLANTS.

As the U. S. Supreme Court had rendered a decision that only 1,500 second feet of water could be diverted from Lake Michigan for all purposes, except water supply, after 1938, plans for hydro-electric plants at Brandon Road, Dresden Island and Starved Rock, based on this decision were prepared to submit to the Federal Power Commission with application for license to construct the plants.

As the original application for license was made in 1925 much additional information as to runoff at the various sites was available and was reduced to tabular form. This required considerable work and time.

As the water level in the various reservoirs has to be maintained for navigation purposes and as the level cannot be raised to any appreciable extent for fear of damage to the cities along the waterway, only the runoff of the streams combined with the diversion from Lake Michigan and the pumpage for water supply is available for power. As this means a great variation in amount of water available the only wheel considered suitable for use is an adjustable blade propeller type wheel similar to the Kaplan Turbine. This type of wheel retains a high degree of efficiency over a wide variation in flow, whereas the Francis type wheel which is very efficient for a constant flow loses rapidly in efficiency if the flow varies materially from the flow for which the wheel is designed.

Application was made to the Federal Power Commission for license to construct these plants in February, and approval was obtained in November, 1932. The plant at Marseilles was not included for the present on account of possible litigation at that site.

A detailed report on this work will be found in the report of C. M. Briggs, engineer in charge of this branch of the work.

ILLINOIS AND MICHIGAN CANAL.

BRIDGES.

Some of the bridges across the canal are in very bad condition and if the canal is to be maintained after the opening of the Illinois Waterway they should be repaired. In some cases, the abutments are leaning toward the canal at such an angle that the pedestal of the bridge is entirely off the masonry of the abutment.

The bridge just east of Ottawa has several members of the trusses bent badly out of line and 50 per cent of one member torn loose from its junction with the lower chord. This bridge is in danger of collapse if a very heavy load is carried across it at any time.

BREAKS IN CANAL BANKS.

Several breaks have occurred in the banks of the canal since the last report generally at the same points that they have occurred in the past. In the level of the canal between Locks Nos. 11 and 12 just west of Ottawa, the canal was formerly constructed with the south bank built of rock for a considerable distance and left at a lower level than the balance of the bank to act as a spillway in very high water. Two streams enter the canal from the north in this level. For some reason this part of the bank was built up to the same level as the other portion of the bank in recent years and no spillway was provided in this level to take care of flood water. A break occurred in the south bank of the canal about six years ago and when it was repaired a spillway was constructed at Lock No. 12. In spite of this a break occurred again during the present year at the same point as before. In rebuilding the bank a row of steel sheetpiling was driven across the gap.

Another break occurred in the Channahon level near the point where the abandoned Kankakee feeder formerly entered the canal. This feeder entered the canal about midway between Locks Nos. 7 and 8, consequently the water in this level which is over nine miles long was supposed to be maintained at a uniform level throughout and the banks were constructed accordingly. When the feeder was abandoned some years ago and a dike constructed across the entrance, the supply of water for this level had to come from the DuPage River at the upstream end of the level and has to traverse the entire length as no spillway was provided when the dike was constructed at the feeder entrance. In consequence of this in rainy weather so much water enters this level of the canal and has to flow such a long distance to get out that there is a considerable rise in the water toward the upstream end of the level to cause sufficient velocity to carry the water away. This causes an overtopping of the bank at some low point and a washout of the bank. These breaks are certain to occur from time to time, unless a spillway is constructed at some point in this level.

LATERAL CANAL AND HYDRAULIC BASIN AT OTTAWA.

The city of Ottawa applied for permission to fill in the lateral canal and hydraulic basin between the Illinois and Michigan Canal and the Illinois River in Ottawa so as to construct a parkway boulevard along the right-of-way eliminating all bridges. Permission for this was refused by the State, but permission was given to eliminate all bridges and construct embankments carrying the streets across the canal, the State reserving the right to have these embankments taken out and movable bridges constructed should the lateral canal ever come into general use again.

MISCELLANEOUS.

FARM CREEK DIVERSION CHANNEL, EAST PEORIA.

Several floods of moderate size have been safely handled by this channel since the completion. The main channel at the point where the diversion channel starts has silted up until the bed is almost level with the crest of the wier across the entrance to the diversion channel causing the water to enter this channel at a much earlier stage of the flood than intended and causing it to carry a much greater portion of the flood water than intended.

An inspection of the channel recently showed that it has not been damaged by any of the floods. Also water was found to be coming up through many of the joints in the concrete floor in spite of the steel sheetpiling under the wier and the water in the main bed of the stream only being about four feet above the level of this floor.

MCHENRY LOCK, MCHENRY.

The operating machines for the lock gates were installed and have operated successfully.

During the past summer (1932) the water in the Fox River has been so low below the dam due partly to holding up the level of Fox Lake and partly to dredging of the channel below the lock, that the miter sill of the lower gates was above the level of the water and no navigation was possible. As the lock walls are not carried down to rock this trouble can be safely remedied only by rebuilding the lock walls and lowering the floor and miter sill of the downstream gate. It is estimated that a new lock can be constructed for $15,000.00.

ALGONQUIN DAM, ALGONQUIN.

Petition was made to the Division of Waterways to place flashboards on the Algonquin Dam to raise the water about 2 feet upstream from the dam. A survey was made and it was found that considerable reconstruction work would have to be done on the dam to render this possible. It is estimated that this work will cost $8,800.00.

PROPOSED DAM AT MOUNT VERNON GAME FARM.

In August, 1931, at the request of the Director of Conservation an inspection was made of the Mount Vernon Game Farm to investigate the possibility of constructing a small dam at that place. It was proposed to construct a small dam in a dry hollow depending only on wet weather flow to maintain the water. It was found that the average summer runoff is so small and the tributary area so small, that on account of the high rate of evaporation in the summer months, it was very doubtful if the water can be kept at a sufficiently high level during the summer to sustain fish life.

BARGE CANAL TERMINAL, CHICAGO.

A survey was made of the site of the proposed barge canal terminal in Chicago where Roby Street crosses the canal. This site is owned by the State and now contains a large grain elevator, two very long wharves and several railroad tracks.

A conference was held with the engineers of Federal barge lines to find the type of terminal that they would prefer. A preliminary design of a terminal was then made and submitted to them for study and report.

TABLE NO. 1—CONTRACT B1—TEMPORARY BRIDGE—VAN BUREN STREET, JOLIET.

Canvass of Bids Received November 24, 1931.

Item No.	Item.	Unit.	Quantities.	Green & Sons Co., 1621 Tower Bldg., Chicago, Ill.		Powers-Thompson Co., 221 S. Chicago St., Joliet, Ill.		Congress Construction Co., 506 S. Wabash Ave., Chicago, Ill.		S. G. Cool Co., 130 N. Wells St., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	State design				$31,500 00		$31,531 00				$35,500 00
2	Alternate								$33,000 00		34,150 00
	Time of completion				75 cal. days		90 cal. days		no time stated		120 cal. days

TABLE NO. 1—Concluded.

Item No.	Item.	Unit.	Quantities.	Kelly-Atkinson Co., 37 W. Van Buren St., Chicago, Ill.		Mackie, Thompson, Tamm, Inc., 228 N. LaSalle St., Chicago, Ill.		Deckert-McDowell Co., 53 W. Jackson Blvd., Chicago, Ill.		E. H. Swenson, R. F. D. No. 2, Lockport, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	State design						$36,000 00		$38,500 00		
2	Alternate				$34,945 00						$40,844 00
	Time of completion				90 cal. days		105 cal. days		100 cal. days		125 cal. days

TABLE NO. 2—CONTRACT B2—SUBSTRUCTURE AND APPROACHES—MARSEILLES CANAL BRIDGE.

Canvass of Bids Received November 24, 1931.

Item No.	Item.	Unit.	Quantities.	Congress Construction Co., 506 S. Wabash Ave., Chicago, Ill.		S. G. Cool Co., 130 N. Wells St., Chicago, Ill.		Powers-Thompson Construction Co., 221 S. Chicago St., Joliet, Ill.		The Warner Construction Co., 173 W. Madison St., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Clearing and grubbing		Lump sum		$ 2,000 00		$ 100 00		$ 100 00		$ 1 00
2	Earth excavation, piers and footings	Cubic yard	1,500	$ 0 30	450 00	$ 0 85	1,275 00	$ 0 80	1,200 00	$ 1 00	1,500 00
3	Rock excavation, piers and footings	Cubic yard	600	2 50	1,500 00	3 00	1,800 00	4 00	2,400 00	3 00	1,800 00
4	Road excavation	Cubic yard	2,200	25	550 00	57	1,254 00	50	1,100 00	50	1,100 00
5	Fill in embankments	Cubic yard	3,000	60	1,800 00	57	1,710 00	50	1,500 00	45	1,350 00
6	Rip-rap	Cubic yard	5	20 00	100 00	5 00	25 00	8 00	40 00	50 00	250 00
7	Concrete	Cubic yard	1,200	9 00	10,800 00	12 00	14,400 00	13 00	15,600 00	14 10	16,920 00
8	Portland cement	Barrel	2,000	1 60	3,200 00	1 87	3,740 00	1 85	3,700 00	1 76	3,520 00
9	Hydrated lime	Bag	900	60	540 00	85	765 00	1 20	1,080 00	75	675 00
10	Reinforcing steel	Pound	121,000	04	4,840 00	035	4,235 00	035	4,235 00	032	3,872 00
11	Structural steel	Pound	160,000	05	8,000 00	035	5,600 00	041	6,560 00	.0385	6,160 00
12	C. I. bearing plates	Pound	5,500	10	550 00	08	440 00	08	440 00	10	550 00
13	Piles delivered	Lin. feet	2,000	15	300 00	35	700 00	30	600 00	40	800 00
14	Piles driven	Lin. feet	1,500	25	375 00	30	450 00	17	255 00	40	600 00
15	Timber and lumber	M. ft. B. M.	135	77 00	10,395 00	68 00	9,180 00	62 00	8,370 00	70 00	9,450 00
16	Concrete pavement	Square yard	490	2 00	980 00	1 20	588 00	1 40	686 00	2 00	980 00
17	Gravel surfacing	Square yard	1,700	30	510 00	60	1,020 00	50	850 00	70	1,190 00
18	Catch basin	Units	2	45 00	90 00	20 00	40 00	25 00	50 00	100 00	200 00
19	8-in. vit. tile drain	Lin. ft	80	1 00	80 00	80	64 00	1 00	80 00	1 00	80 00
20	Seeding	Acre	.2	200 00	40 00	70 00	14 00	1,000 00	200 00	250 00	50 00
	Total				$47,100 00		$47,400 00		$49,046 00		$51,048 00

TABLE NO. 2—Concluded.

Item No.	Item.	Unit.	Quantities.	Joliet Bridge & Construction Co., 510 Morris Bldg., Joliet, Ill.		J. L. Simmons Co., 917 E. Oakland Ave., Bloomington, Ill.		John C. Paskins Co., 208 S. LaSalle St., Chicago, Ill.		Union Bridge & Construction Co., 1205 Midland Bldg., Kansas City, Mo.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Clearing and grubbing		Lump sum		$ 100 00		$ 450 00		$ 500 00		$ 191 00
2	Earth excavation, piers and footings	Cubic yard	1,500	$ 1 00	1,500 00	$ 1 10	1,650 00	$ 2 00	3,000 00	$ 1 00	1,500 00
3	Rock excavation, piers and footings	Cubic yard	600	6 00	3,600 00	3 30	1,980 00	3 00	1,800 00	7 00	4,200 00
4	Road excavation	Cubic yard	2,200	45	990 00	70	1,540 00	75	1,650 00	50	1,100 00
5	Fill in embankments	Cubic yard	3,000	50	1,500 00	70	2,100 00	50	1,500 00	65	1,950 00
6	Rip-rap	Cubic yard	5	2 00	10 00	6 00	30 00	6 50	32 50	1 60	8 00
7	Concrete	Cubic yard	1,200	15 00	18,000 00	17 00	20,400 00	16 25	19,500 00	19 50	23,400 00
8	Portland cement	Barrel	2,000	1 80	3,600 00	1 53	3,060 00	2 00	4,000 00	2 25	4,500 00
9	Hydrated lime	Bag	900	60	540 00	60	540 00	1 40	1,260 00	80	720 00
10	Reinforcing steel	Pound	121,000	04	4,840 00	034	4,114 00	04	4,840 00	05	6,050 00
11	Structural steel	Pound	160,000	038	6,080 00	.0384	6,144 00	025	4,000 00	05	8,000 00
12	C. I. bearing plates	Pound	5,500	07	385 00	08	440 00	11	605 00	10	550 00
13	Piles delivered	Lin. ft	2,000	45	900 00	24	480 00	30	600 00	30	600 00
14	Piles driven	Lin. ft	1,500	15	225 00	30	450 00	50	750 00	75	1,125 00
15	Timber and lumber	M. ft. B. M	135	75 00	10,125 00	74 00	9,990 00	70 00	9,450 00	82 00	11,070 00
16	Concrete pavement	Square yard	490	2 00	980 00	1 70	833 00	2 50	1,225 00	1 70	833 00
17	Gravel surfacing	Square yard	1,700	40	680 00	53	901 00	2 00	3,400 00	40	680 00
18	Catch basin	Units	2	25 00	50 00	25 00	50 00	50 00	100 00	25 00	50 00
19	8-in. vit. tile drain	Lin. ft	80	1 00	80 00	1 10	88 00	80	64 00	50	40 00
20	Seeding	Acre	.2	500 00	100 00	150 00	30 00	40 00	8 00	385 50	77 10
	Total				$54,285 00		$55,270 00		$58,284 50		$66,644 10

TABLE NO. 3—CONTRACT B3—SUPERSTRUCTURE FOR MARSEILLES CANAL BRIDGE.

Canvass of Bids Received November 24, 1931.

Item No.	Item.	Unit.	Quantities.	International Steel and Iron Co., Evansville, Ind.		Vincennes Bridge Co., Vincennes, Ind.		Midland Structural Steel Co., 1300-10 S. 54th Ave., Cicero, Ill.		Mississippi Valley Structural Steel Co., Box 299, Decatur, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Structural steel	Pound	445,000	$ 0 042	$18,690 00	$ 0 0415	$18,467 50	$ 0 0455	$20,247 50	$ 0 0461	$20,514 50
2	Cast steel	Pound	6,500	06	390 00	08	520 00	075	487 50	09	585 00
3	Concrete	Cubic yard	110	13 00	1,430 00	12 50	1,375 00	17 00	1,870 00	15 50	1,705 00
4	Portland cement	Barrel	165	1 50	247 50	2 00	330 00	1 50	247 50	1 55	255 75
5	Hydrated lime	Bag	55	70	38 50	70	38 50	55	30 25	80	44 00
6	Reinforcing steel	Pound	22,000	03	660 00	033	726 00	0255	561 00	03	660 00
	Total				$21,456 00		$21,457 00		$23,443 75		$23,764 25

TABLE NO. 3—Concluded.

Item No.	Item.	Unit.	Quantities.	Lakeside Bridge & Steel Co., 33d and Villard Ave., Milwaukee, Wis.		Worden-Allen Co., 208 S. LaSalle St., Chicago, Ill.		Illinois Steel Bridge Co., Jacksonville, Ill.		American Bridge Co., Frick Bldg., Pittsburgh, Pa.		John C. Paskins Co., 208 S. LaSalle St., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Structural steel	Pound	445,000	$ 0 047	$20,915 00	$ 0 0482	$21,449 00	$ 0 048	$21,360 00	$ 0 0548	$24,386 00	$ 0 055	$24,475 00
2	Cast steel	Pound	6,500	10	650 00	0945	614 25	10	650 00	0982	638 30	12	780 00
3	Concrete	Cubic yard	110	13 00	1,430 00	15 00	1,650 00	17 00	1,870 00	18 50	2,035 00	17 00	1,870 00
4	Portland cement	Barrel	165	1 50	247 50	1 55	255 75	1 80	297 00	1 33	219 45	2 00	330 00
5	Hydrated lime	Bag	55	60	33 00	85	46 75	80	44 00	50	27 50	1 80	99 00
6	Reinforcing steel	Pound	22,000	03	660 00	0325	715 00	03	660 00	0312	686 40	05	1,100 00
	Total				$23,935 50		$24,730 75		$24,881 00		$27,992 65		$28,654 00

TABLE NO. 4—CONTRACT B4—SUPERSTRUCTURE JACKSON AND JEFFERSON STREET BRIDGES.

Canvass of Bids Received November 24, 1931.

JACKSON STREET.

Item No.	Item.	Unit.	Quantities.	Mississippi Valley Structural Steel Co., 20 N. Wacker Dr., Chicago, Ill.		John C. Paskins Co., 208 S. LaSalle St., Chicago, Ill.		Independent Bridge Co., Neville Island Branch, Pittsburgh, Pa.		Lakeside Bridge & Steel Co., 3200 W. Villard Ave., Milwaukee, Wis.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Structural steel	Pound	1,120,000	$ 0 05	$56,000 00	$ 0 0577	$64,624 00	$ 0 056	$62,720 00	$ 0 0523	$58,576 00
2	Structural castings of ordinary cast steel	Pound	79,000	11	8,690 00	124	9,796 00	09	7,110 00	112	8,848 00
3	Structural castings of special cast steel	Pound	----------	--------	----------	50	----------	11	----------	--------	----------
4	Machinery castings of ordinary cast steel	Pound	24,000	17	4,080 00	17	4,080 00	18	4,320 00	181	4,344 00
5	Steel forgings	Pound	7,500	20	1,500 00	16	1,200 00	16	1,200 00	21	1,575 00
6	Forged steel shafts	Pound	7,500	11	825 00	07	525 00	12	900 00	129	967 50
7	Cold rolled shafts	Pound	2,500	10	250 00	06	150 00	12	300 00	128	320 00
8	Miscellaneous machinery parts	Pound	2,000	22	440 00	15	300 00	30	600 00	25	500 00
9	Bronze and brass	Pound	1,700	42	714 00	40	680 00	50	850 00	495	841 50
10	Babbitt metal	Pound	200	40	80 00	24	48 00	70	140 00	42	84 00
11	Ornamental railings	Lin. ft	740	7 00	5,180 00	5 00	3,700 00	7 00	5,180 00	6 50	4,810 00
12	Counterweight concrete	Cubic yard	255	7 00	1,785 00	10 00	2,550 00	10 00	2,550 00	21 00	5,355 00
13	Rubbed concrete finish	Square ft	1,100	08	88 00	10	110 00	10	110 00	08	88 00
14	Reinforcing metal	Pound	40,000	036	1,440 00	03	1,200 00	04	1,600 00	03	1,200 00
15	Timber and lumber	M. ft. B. M	39	70 00	2,730 00	65 00	2,535 00	70 00	2,730 00	55 00	2,145 00
16	Treating timber and lumber	M. ft. B. M	39	23 00	897 00	20 00	780 00	10 00	390 00	14 00	546 00
17	Asphalt plank pavement	Square yard	420	2 60	1,092 00	1 80	756 00	3 00	1,260 00	2 13	894 60
18	Concrete in deck slab	Cubic yard	215	15 00	3,225 00	15 00	3,225 00	14 00	3,010 00	13 00	2,795 00
19	Wearing surface on concrete sidewalks	Square ft	4,300	04	172 00	05	215 00	10	430 00	11	473 00
20	Portland cement	Barrel	720	1 40	1,008 00	1 50	1,080 00	1 50	1,080 00	1 50	1,080 00
21	Hydrated lime	Bag	105	80	84 00	1 40	147 00	60	63 00	60	63 00
22	Electrical equipment complete	----------	Lump sum	--------	18,900 00	--------	17,000 00	--------	16,857 00	--------	20,500 00
23	Operators' house, etc	----------	Lump sum	--------	6,874 00	--------	3,500 00	--------	6,000 00	--------	5,000 00
	Total, Design A	----------	----------	--------	$116,054 00	--------	$118,201 00	--------	$119,400 00	--------	$121,005 60
	Total, Design B	----------	----------	--------	116,654 00	--------	120,100 00	--------	----------	--------	124,258 00

JEFFERSON STREET.

101	Structural steel	Pound	1,900,000	$ 0 0483	$91,770 00	$ 0 05	$95,000 00	$ 0 05	$95,000 00	$ 0 051	$96,900 00
102	Structural castings of ordinary cast steel	Pound	42,000	11	4,620 00	10	4,200 00	09	3,780 00	1155	4,851 00
103	Structural castings of special cast steel	Pound	58,000	12	6,960 00	12	6,960 00	11	6,380 00	1277	7,406 60
104	Machinery castings of ordinary cast steel	Pound	33,000	17	5,610 00	15	4,950 00	16	5,280 00	163	5,379 00
105	Steel forgings	Pound	9,500	20	1,900 00	16	1,520 00	15	1,425 00	186	1,767 00
106	Forged steel shafts	Pound	10,000	11	1,100 00	07	700 00	12	1,200 00	136	1,360 00
107	Cold rolled shafts	Pound	5,000	10	500 00	06	300 00	12	600 00	11	550 00
108	Miscellaneous machinery parts	Pound	2,500	22	550 00	15	375 00	30	750 00	232	580 00
109	Bronze and brass	Pound	1,900	42	798 00	40	760 00	50	950 00	575	1,092 50
110	Babbitt metal	Pound	400	40	160 00	24	96 00	70	280 00	42	168 00
111	Ornamental railings	Lin. ft	630	7 00	4,410 00	5 00	3,150 00	7 00	4,410 00	6 50	4,095 00
112	Counterweight concrete	Cubic yard	485	7 00	3,395 00	14 00	6,790 00	10 00	4,850 00	21 00	10,185 00
113	Rubbed concrete finish	Square ft	2,000	075	150 00	10	200 00	10	200 00	08	160 00
114	Reinforcing metal	Pound	48,000	036	1,728 00	04	1,920 00	04	1,920 00	03	1,440 00
115	Timber and lumber	M. ft. B. M	60	70 00	4,200 00	100 00	6,000 00	70 00	4,200 00	55 00	3,300 00
116	Treating timber and lumber	M. ft. B. M	60	23 00	1,380 00	20 00	1,200 00	10 00	600 00	14 00	840 00
117	Asphalt plank pavement	Square yard	680	2 60	1,768 00	1 80	1,224 00	3 00	2,040 00	2 13	1,448 40
118	Concrete in deck slab	Cubic yard	250	15 00	3,750 00	16 00	4,000 00	14 00	3,500 00	13 00	3,250 00
119	Wearing surface on concrete sidewalks	Square ft	4,000	04	160 00	05	200 00	10	400 00	11	440 00
120	Portland cement	Barrel	1,100	1 40	1,540 00	1 50	1,650 00	1 50	1,650 00	1 50	1,650 00
121	Hydrated lime	Bag	125	80	100 00	1 25	156 25	60	75 00	60	75 00
122	Electrical equipment complete		Lump sum		18,900 00		17,000 00		16,910 00		22,000 00
123	Operators' house, etc		Lump sum		6,874 00		2,300 00		6,000 00		5,000 00
	Total, Design A				$162,323 00		$160,651 25		$162,400 00		$173,937 50
	Total, Design B				166,523 00		164,900 00				183,552 00
	Total, Design C				163,723 00		162,200 00				178,673 00
	Total both bridges, Design A				$278,377 00		$278,852 25		$281,800 00		$294,943 10

TABLE NO. 4—Continued.

JACKSON STREET.

Item No.	Item.	Unit.	Quantities.	Milwaukee Bridge Co., 3282 N. 34th St., Milwaukee, Wis.		Mt. Vernon Bridge Co., Mt. Vernon, Ohio.		American Bridge Co., 208 S. LaSalle St., Chicago, Ill.		F. K. Ketler Co., 105 W. Monroe St., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Structural steel	Pound	1,120,000	$ 0 0616	$68,992 00	$ 0 054	$60,480 00	$ 0 0628	$70,336 00	$ 0 0535	$59,920 00
2	Structural castings of ordinary cast steel	Pound	79,000	1033	8,160 70	11	8,690 00	0866	6,841 40	11	8,690 00
3	Structural castings of special cast steel	Pound								15	
4	Machinery castings of ordinary cast steel	Pound	24,000	1988	4,771 20	18	4,320 00	1923	4,615 20	25	6,000 00
5	Steel forgings	Pound	7,500	163	1,222 50	21	1,575 00	1943	1,457 25	25	1,875 00
6	Forged steel shafts	Pound	7,500	111	832 50	13	975 00	0915	686 25	20	1,500 00
7	Cold rolled shafts	Pound	2,500	11	275 00	11	275 00	0943	235 75	18	450 00
8	Miscellaneous machinery parts	Pound	2,000	30	600 00	33	660 00	3778	755 60	50	1,000 00
9	Bronze and brass	Pound	1,700	50	850 00	50	850 00	6025	1,024 25	60	1,020 00
10	Babbitt metal	Pound	200	80	160 00	30	60 00	8845	176 90	1 00	200 00
11	Ornamental railings	Lin. ft	740	6 00	4,440 00	8 00	5,920 00	8 25	6,105 00	7 00	5,180 00
12	Counterweight concrete	Cubic yard	255	6 75	1,721 25	7 00	1,785 00	6 75	1,721 25	14 00	3,570 00
13	Rubbed concrete finish	Square ft	1,100	10	110 00	10	110 00	10	110 00	10	110 00
14	Reinforcing metal	Pound	40,000	04	1,600 00	045	1,800 00	0365	1,460 00	04	1,600 00
15	Timber and lumber	M. ft. B. M	39	70 00	2,730 00	75 00	2,925 00	66 00	2,574 00	75 00	2,925 00
16	Treating timber and lumber	M. ft. B. M	39	17 00	663 00	28 00	1,092 00	18 00	702 00	15 00	585 00
17	Asphalt plank pavement	Square yard	420	2 55	1,071 00	3 00	1,260 00	2 00	840 00	2 00	840 00
18	Concrete in deck slab	Cubic yard	215	15 90	3,418 50	16 00	3,440 00	15 90	3,418 50	17 00	3,655 00
19	Wearing surface on concrete sidewalks	Square ft	4,300	04	172 00	05	215 00	04	172 00	30	1,290 00
20	Portland cement	Barrel	720	1 50	1,080 00	1 40	1,008 00	1 35	972 00	2 00	1,440 00
21	Hydrated lime	Bag	105	75	78 75	1 20	126 00	50	52 50	2 00	210 00
22	Electrical equipment complete		Lump sum		20,500 00		18,200 00		20,226 00		22,000 00
23	Operators' house, etc		Lump sum		6,000 00		8,000 00		6,858 00		8,000 00
	Total, Design A				$129,448 40		$123,766 00		$131,339 85		$132,060 00
	Total, Design B						125,866 00		132,491 85		130,672 00

JEFFERSON STREET.

101	Structural steel	Pound	1,900,000	$ 0 0534	$101,460 00	$0 055	$104,500 00	$0 0582	$110,580 00	$0 051	$96,900 00
102	Structural castings of ordinary cast steel	Pound	42,000	091	3,822 00	10	4,200 00	0922	3,872 40	11	4,620 00
103	Structural castings of special cast steel	Pound	58,000	11	6,380 00	12	6,960 00	0907	5,260 60	15	8,700 00
104	Machinery castings of ordinary cast steel	Pound	33,000	17	5,610 00	18	5,940 00	1715	5,659 50	25	8,250 00
105	Steel forgings	Pound	9,500	163	1,548 50	21	1,995 00	1937	1,840 15	25	2,375 00
106	Forged steel shafts	Pound	10,000	096	960 00	13	1,300 00	0857	857 00	20	2,000 00
107	Cold rolled shafts	Pound	5,000	11	550 00	11	550 00	086	430 00	18	900 00
108	Miscellaneous machinery parts	Pound	2,500	30	750 00	33	825 00	3563	890 75	50	1,250 00
109	Bronze and brass	Pound	1,900	50	950 00	50	950 00	602	1,143 80	65	1,235 00
110	Babbitt metal	Pound	400	80	320 00	30	120 00	8839	353 56	1 00	400 00
111	Ornamental railing	Lin. ft	630	6 00	3,780 00	8 00	5,040 00	8 25	5,197 50	7 00	4,410 00
112	Counterweight concrete	Cubic yard	485	6 75	3,273 75	7 00	3,395 00	6 75	3,273 75	14 00	6,790 00
113	Rubbed concrete finish	Square ft	2,000	10	200 00	10	200 00	10	200 00	10	200 00
114	Reinforcing metal	Pound	48,000	04	1,920 00	045	2,160 00	0365	1,752 00	04	1,920 00
115	Timber and lumber	M. ft. B. M	60	70 00	4,200 00	75 00	4,500 00	67 00	4,020 00	75 00	4,500 00
116	Treating timber and lumber	M. ft. B. M	60	17 00	1,020 00	28 00	1,680 00	18 00	1,080 00	15 00	900 00
117	Asphalt plank pavement	Square yard	680	2 80	1,904 00	3 00	2,040 00	2 25	1,530 00	1 50	1,020 00
118	Concrete in deck slab	Cubic yard	250	15 90	3,975 00	16 00	4,000 00	15 90	3,975 00	18 00	4,500 00
119	Wearing surface on concrete sidewalks	Square ft	4,000	04	160 00	05	200 00	04	160 00	30	1,200 00
120	Portland cement	Barrel	1,100	1 50	1,650 00	1 40	1,540 00	1 35	1,485 00	2 00	2,200 00
121	Hydrated lime	Bag	125	75	93 75	1 20	150 00	50	62 50	2 00	250 00
122	Electrical equipment complete		Lump sum		22,000 00		18,400 00		21,832 00		23,000 00
123	Operators' house, etc		Lump sum		6,000 00		8,000 00		7,083 00		8,000 00
	Total, Design A				$172,527 00		$178,645 00		$182,538 51		$185,520 00
	Total, Design B						183,245 00		188,500 88		186,520 00
	Total, Design C						178,445 00				184,120 00
	Total both bridges, Design A				$301,975 40		$302,411 00		$313,878 36		$317,580 00

TABLE NO. 4—Continued.

JACKSON STREET.

Item No.	Item.	Unit.	Quantities.	Wisconsin Bridge & Iron Co., Milwaukee, Wis.		Worden-Allen Co., 208 S. LaSalle St., Chicago, Ill.		The Ketler-Elliott Co., 3101 S. California Ave., Chicago, Ill.		Kelly-Atkinson Construction Co., 37 W. Van Buren St., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Structural steel	Pound	1,120,000	$ 0 064	$71,680 00	$ 0 0635	$71,120 00	$ 0 0708	$79,296 00	$ 0 07	$78,400 00
2	Structural castings of ordinary cast steel	Pound	79,000	1154	9,116 60	12	9,480 00	088	6,952 00	11	8,690 00
3	Structural castings of special cast steel	Pound								1 00	
4	Machinery castings of ordinary cast steel	Pound	24,000	2033	4,875 20	22	5,280 00	19	4,560 00	20	4,800 00
5	Steel forgings	Pound	7,500	2082	1,561 50	245	1,837 50	19	1,425 00	21	1,575 00
6	Forged steel shafts	Pound	7,500	1361	1,020 75	145	1,087 50	09	675 00	11	825 00
7	Cold rolled shafts	Pound	2,500	1342	3,355 00	095	237 50	09	225 00	11	275 00
8	Miscellaneous machinery parts	Pound	2,000	3683	736 60	55	1,100 00	38	760 00	40	800 00
9	Bronze and brass	Pound	1,700	3902	663 34	66	1,122 00	61	1,037 00	80	1,360 00
10	Babbitt metal	Pound	200	6437	128 74	275	55 00	90	180 00	1 00	200 00
11	Ornamental railings	Lin. ft	740	5 87	4,343 80	7 00	5,180 00	7 20	5,328 00	7 50	5,500 00
12	Counterweight concrete	Cubic yard	255	17 00	4,335 00	7 90	2,014 50	10 00	2,550 00	7 50	1,912 50
13	Rubbed concrete finish	Square ft	1,100	10	110 00	085	93 50	05	55 00	10	110 00
14	Reinforcing metal	Pound	40,000	0365	1,460 00	035	1,400 00	045	1,800 00	05	2,000 00
15	Timber and lumber	M. ft. B. M	39	68 24	2,661 36	84 00	3,276 00	100 00	3,900 00	80 00	3,120 00
16	Treating timber and lumber	M. ft. B. M	39	17 00	663 00	14 65	571 35	14 50	565 50	30 00	1,170 00
17	Asphalt plank pavement	Square yard	420	2 26	949 20	3 00	1,260 00	2 10	882 00	2 80	1,176 00
18	Concrete in deck slab	Cubic yard	215	13 50	2,902 50	15 65	3,364 75	17 00	3,655 00	17 00	3,655 00
19	Wearing surface on concrete sidewalks	Square ft	4,300	05	215 00	065	279 50	06	258 00	05	215 00
20	Portland cement	Barrel	720	1 07	770 40	1 38	993 60	1 84	1,324 00	1 50	1,080 00
21	Hydrated lime	Bag	105	225	236 25	1 26	132 30	825	86 63	1 20	126 00
22	Electrical equipment complete		Lump sum		16,200 00		20,000 00		19,000 00		20,000 00
23	Operators' house, etc		Lump sum		6,835 76		8,500 00		6,870 00		6,500 00
	Total, Design A				$134,824 00		$138,385 00		$141,384 93		$143,489 50
	Total, Design B				137,220 00		144,244 00		141,721 93		142,489 50

JEFFERSON STREET.

101	Structural steel	Pound	1,900,000	$ 0 0586	$111,340 00	$0 05986	$113,734 00	$ 0 0668	$126,920 00	$ 0 066	$125,400 00
102	Structural castings of ordinary cast steel	Pound	42,000	1215	5,103 00	11	4,620 00	101	4,242 00	1161	4,876 20
103	Structural castings of special cast steel	Pound	58,000	1195	6,931 00	13	7,540 00	10	5,800 00	106	6,148 00
104	Machinery castings of ordinary cast steel	Pound	33,000	1665	5,494 50	20	6,600 00	18	5,940 00	19	6,270 00
105	Steel forgings	Pound	9,500	2137	2,030 15	22	2,090 00	203	1,928 50	21	1,995 00
106	Forged steel shafts	Pound	10,000	13	1,300 00	13	1,300 00	095	950 00	11	1,100 00
107	Cold rolled shafts	Pound	5,000	0995	497 50	085	425 00	095	475 00	10	500 00
108	Miscellaneous machinery parts	Pound	2,500	2743	685 75	50	1,250 00	36	900 00	40	1,000 00
109	Bronze and brass	Pound	1,900	4258	809 02	60	1,140 00	61	1,159 00	80	1,520 00
110	Babbitt metal	Pound	400	7536	301 44	25	100 00	89	356 00	1 00	400 00
111	Ornamental railing	Lin. ft	630	5 87	3,698 10	7 00	4,410 00	7 20	4,536 00	7 50	4,725 00
112	Counterweight concrete	Cubic yard	485	17 00	8,245 00	7 90	3,831 50	10 00	4,850 00	7 50	3,637 50
113	Rubbed concrete finish	Square ft	2,000	10	200 00	085	170 00	05	100 00	10	200 00
114	Reinforcing metal	Pound	48,000	0365	1,752 00	035	1,680 00	045	2,160 00	05	2,400 00
115	Timber and lumber	M. ft. B. M	60	68 40	4,104 00	83 50	5,010 00	100 00	6,000 00	80 00	4,800 00
116	Treating timber and lumber	M. ft. B. M	60	17 00	1,020 00	14 65	879 00	14 50	870 00	30 00	1,800 00
117	Asphalt plank pavement	Square yard	680	3 00	2,040 00	3 31	2,250 80	2 42	1,645 60	2 80	1,904 00
118	Concrete in deck slab	Cubic yard	250	13 50	3,375 00	15 65	3,912 50	17 00	4,250 00	17 00	4,250 00
119	Wearing surface on concrete sidewalks	Square ft	4,000	05	200 00	065	260 00	06	240 00	05	200 00
120	Portland cement	Barrel	1,100	1 07	1,177 00	1 38	1,518 00	1 84	2,024 00	1 50	1,650 00
121	Hydrated lime	Bag	125	225	281 25	1 26	157 50	825	103 13	1 20	150 00
122	Electrical equipment complete		Lump sum		18,400 00		22,750 00		21,000 00		22,000 00
123	Operators' house, etc		Lump sum		7,115 76		8,500 00		7,050 00		6,500 00
	Total, Design A				$186,100 47		$194,128 30		$203,499 23		$203,425 70
	Total, Design B				192,770 52		205,075 82		207,618 53		203,966 00
	Total, Design C				188,157 04		199,541 49				202,425 00
	Total both bridges, Design A				$320,924 47		$332,513 30		$344,884 16		$346,915 20

TABLE NO. 5—CONTRACT B5—BRANDON ROAD BRIDGE.

Canvass of Bids Received November 24, 1931.

Item No.	Item.	Unit.	Quantities.	Independent Bridge Co., Pittsburgh, Pa.		Powers, Thompson Construction Co., Joliet, Ill.		Mississippi Valley Structural Steel Co., 20 N. Wacker Dr., Chicago, Ill.		Mt. Vernon Bridge Co., Mt. Vernon, Ohio.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Entire bridge, except as noted		Lump sum		$64,000 00		$64,100 00		$62,963 00		$65,000 00
2	Rock excavation	Cubic yard	80	$ 2 50	200 00	$ 8 00	640 00	$ 9 00	720 00	$ 8 00	640 00
3	Earth excavation	Cubic yard	1,800	1 00	1,800 00	1 00	1,800 00	1 10	1,980 00	1 00	1,800 00
4	Embankment	Cubic yard	11,000	30	3,300 00	70	7,700 00	80	8,800 00	70	7,700 00
5	Seeding	Acre	0.5	600 00	300 00	600 00	300 00	650 00	325 00	600 00	300 00
6	Gravel surfacing	Square yard	1,100	30	330 00	50	550 00	55	605 00	50	550 00
7	Roadway fence	Lin. ft	610	50	305 00	86	524 60	90	549 00	90	549 00
8	Concrete	Cubic yard	250	9 00	2,250 00	12 00	3,000 00	13 00	3,250 00	12 00	3,000 00
9	Portland cement	Barrel	1,530	1 50	2,295 00	1 35	2,065 50	1 50	2,295 00	1 40	2,142 00
10	Hydrated lime	Bag	420	50	210 00	1 20	504 00	1 40	588 00	1 20	504 00
11	Water supply line	Lin. ft	650	1 00	650 00	1 10	715 00	1 30	845 00	1 50	975 00
	Total				$75,640 00		$81,899 10		$82,920 00		$83,160 00

TABLE NO. 5—Concluded.

Item No.	Item.	Unit.	Quantities.	John C. Paskins Co., 208 S. LaSalle St., Chicago, Ill.		Milwaukee Bridge Co., 3282 N. 34th St., Milwaukee, Wis.		M. E. White Co., 1735 Fullerton Ave., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Entire bridge, except as noted		Lump sum		$64,415 00		$72,017 00		$77,882 00
2	Rock excavation	Cubic yard	80	$ 4 00	320 00	$ 8 00	640 00	$ 2 25	180 00
3	Earth excavation	Cubic yard	1,800	2 00	3,600 00	1 00	1,800 00	60	1,080 00
4	Embankment	Cubic yard	11,000	80	8,800 00	70	7,700 00	95	10,450 00
5	Seeding	Acre	0.5	50 00	25 00	600 00	300 00	150 00	75 00
6	Gravel surfacing	Square yard	1,100	1 50	1,650 00	50	550 00	35	385 00
7	Roadway fence	Lin. ft	610	1 50	915 00	86	524 60	65	396 50
8	Concrete	Cubic yard	250	6 00	1,500 00	12 00	3,000 00	6 50	1,625 00
9	Portland cement	Barrel	1,530	2 00	3,060 00	1 50	2,295 00	1 50	2,295 00
10	Hydrated lime	Bag	420	1 40	588 00	75	315 00	1 00	420 00
11	Water supply line	Lin. ft	650	60	390 00	1 10	715 00	1 54	1,001 00
	Total				$85,263 00		$89,856 60		$95,789 50

TABLE NO. 6—CONTRACT B6—SUBSTRUCTURES—JACKSON, CASS AND JEFFERSON STREET BRIDGES.

Canvass of Bids Received January 12, 1932.

Item No.	Item.	Unit.	Quantities.	Powers-Thompson Construction Co., 221 S. Chicago St., Joliet, Ill.		Bates & Rogers Construction Co., 111 W. Washington St., Chicago, Ill.		Congress Construction Co., 506 S. Wabash Ave., Chicago, Ill.		Great Lakes D. & D. Co., 104 S. Michigan Ave., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	For removing and disposing of the superstructure, etc.—Jackson Street bridge	Lump sum	--------------	--------	$ 3,600 00	--------	$ 6,200 00	--------	$ 10,000 00	--------	$ 7,000 00
2	For removing and disposing of the superstructure, etc.—Cass Street bridge	Lump sum	--------------	--------	4,600 00	--------	6,200 00	--------	18,000 00	--------	10,000 00
3	For removing and disposing of the superstructure, etc.—Jefferson Street bridge	Lump sum	--------------	--------	5,800 00	--------	10,500 00	--------	12,000 00	--------	12,000 00
	Piers and abutments removed, etc.—										
4	From 0 ft. to–5 ft	Cubic yard	450	$ 2 50	1,125 00	$ 4 20	1,890 00	$ 4 50	2,025 00	$ 4 60	2,070 00
5	From –5 ft. to –10 ft	Cubic yard	350	2 75	962 50	7 20	2,520 00	2 00	700 00	5 30	1,855 00
6	From –10 ft. to –15 ft	Cubic yard	110	3 00	330 00	12 00	1,320 00	2 00	220 00	6 40	704 00
7	From –15 ft. to –20 ft	Cubic yard	40	3 50	140 00	18 00	720 00	2 00	80 00	7 55	302 00
8	Below –20 ft	Cubic yard	40	4 00	160 00	18 00	720 00	2 00	80 00	9 10	364 00
9	Earth excavation	Cubic yard	1,150	1 50	1,725 00	1 35	1,552 50	1 00	1,150 00	3 00	3 450 00
10	Rock excavation	Cubic yard	550	12 00	6,600 00	5 00	2,750 00	4 50	2,475 00	39 50	21,725 00
11	Pavement or concrete sidewalk removed and disposed of	Square yard	100	80	80 00	1 15	115 00	1 00	100 00	80	80 00
12	Concrete for structures, above present water level	Cubic yard	5,000	7 50	37,500 00	12 10	60,500 00	20 00	100,000 00	12 20	61,000 00
13	Concrete for structures, below present water level	Cubic yard	1,700	9 75	16,575 00	11 70	19,890 00	20 00	34,000 00	31 50	53,550 00
14	Portland cement	Barrel	10,400	1 65	17,160 00	1 80	18,720 00	1 50	15,600 00	2 65	27,560 00
15	Hydrated lime	100-lb. bag	1,000	80	800 00	84	840 00	60	600 00	1 00	1,000 00
16	Reinforcing steel	Pound	240,000	035	8,400 00	04	9,600 00	05	12,000 00	05	12,000 00
17	Drilling and grouting reinforcing rods, west abutment, Cass Street	Lump sum	--------------	--------	75 00	--------	120 00	--------	300 00	--------	760 00
18	Masonry bolts and anchorages	Pound	101,000	01	1,010 00	041	4,141 00	02	2,020 00	045	4,545 00
19	Curb angles, fastenings, etc	Pound	220	10	22 00	18	39 60	15	33 00	20	44 00
20	Oak lumber	M. ft. B. M	8.5	90 00	765 00	149 50	1,270 75	140 00	1,190 00	240 00	2,040 00
21	Roadway fences, stairways	M. ft. B. M	3	75 00	225 00	89 50	268 50	120 00	360 00	230 00	690 00
22	Embankments and approaches	Cubic yard	3,200	1 60	5,120 00	1 31	4,192 00	2 00	6,400 00	3 00	9,600 00
23	Concrete pavement	Square yard	850	1 10	935 00	1 41	1,198 50	2 50	2,125 00	2 40	2,040 00
24	Asphalt pavement, including concrete base	Square yard	125	4 00	500 00	3 22	402 50	2 00	250 00	4 60	575 00
25	Gravel surfacing	Square yard	700	50	350 00	19	133 00	30	210 00	55	385 00

26	Concrete sidewalk	Square ft	1,560	20	312 00	18	280 80	35	546 00	20	312 00
27	Cinder sidewalk	Square ft	1,300	05	65 00	09	117 00	12	156 00	10	130 00
28	Combined curb and gutter	Linear ft	300	65	195 00	90	270 00	2 00	600 00	1 50	450 00
29	3-in. fibre conduit	Linear ft	100	35	35 00	60	60 00	40	40 00	40	40 00
30	6-in. vitrified pipe sewer	Linear ft	20	75	15 00	85	17 00	1 00	20 00	1 90	38 00
31	8-in. vitrified pipe sewer	Linear ft	60	90	54 00	1 00	60 00	2 00	120 00	2 30	138 00
32	18-in. vitrified pipe sewer	Linear ft	45	2 00	90 00	2 65	119 25	3 00	135 00	4 60	207 00
33	Gratings, covers, curbs, etc	Pound	4,500	05	225 00	065	292 50	15	675 00	10	450 00
34	Catch basin, etc	Units	3	60 00	180 00	72 00	216 00	100 00	300 00	150 00	450 00
35	Sewer manhole, etc	Units	2	60 00	120 00	120 00	240 00	150 00	300 00	150 00	300 00
36	Sewer manhole repaired-altered	Unit	1	20 00	20 00	30 00	30 00	100 00	100 00	115 00	115 00
37	Sump in transformer vaults	Units	3	10 00	30 00	3 70	11 10	75 00	225 00	75 00	225 00
38	Hydrant adjusted to new grade	Unit	1	50 00	50 00	90 00	90 00	30 00	30 00	150 00	150 00
39	Water pipe manhole adjusted	Units	4	15 00	60 00	40 00	160 00	60 00	240 00	75 00	300 00
40	For preserving and restoring the lawn and hedges of P. S. Co. plant	Lump sum			50 00		120 00		400 00		610 00
	Total				$116,060 50		$157,887 00		$225,805 00		$239,254 00

TABLE NO. 6—Continued.

Item No.	Item.	Unit.	Quantities.	Walter S. Rae, Oliver Bldg., Pittsburgh, Pa.		Underground Construction Co., 130 N. Wells St., Chicago, Ill.		Kansas City Bridge Co., 215 Pershing Rd., Kansas City, Mo.		Fitzsimons & Connell, D. & D. Co., 10 S. LaSalle St., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	For removing and disposing of the superstructure, etc.—Jackson Street bridge	Lump sum			$47,000 00		$ 9,000 00		$ 12,000 00		$ 6,100 00
2	For removing and disposing of the superstructure, etc.—Cass Street bridge	Lump sum			27,000 00		7,100 00		13,000 00		14,000 00
3	For removing and disposing of the superstructure, etc.—Jefferson Street bridge	Lump sum			35,600 00		8,500 00		14,000 00		14,000 00
	Piers and abutments removed, etc.—										
4	From 0 ft. –to 5 ft	Cubic yard	450	$ 8 00	3,600 00	$ 12 50	5,625 00	$ 6 00	2,700 00	$ 8 00	3,600 00
5	From –5 ft. to –10 ft	Cubic yard	350	8 00	2,800 00	15 80	5,530 00	7 50	2,625 00	8 00	2,800 00
6	From –10 ft. to –15 ft	Cubic yard	110	8 00	880 00	22 60	2,486 00	10 00	1,100 00	8 00	880 00
7	From –15 ft. to –20 ft	Cubic yard	40	8 00	320 00	27 40	1,096 00	15 00	600 00	15 00	600 00
8	Below –20 ft	Cubic yard	40	8 00	320 00	27 40	1,096 00	20 00	800 00	20 00	800 00
9	Earth excavation	Cubic yard	1,150	1 50	1,725 00	4 00	4,600 00	2 50	2,875 00	3 00	3,450 00
10	Rock excavation	Cubic yard	550	5 00	2,750 00	37 80	20,790 00	30 00	16,500 00	15 00	8,250 00

TABLE NO. 6—Concluded.

Item No.	Item.	Unit.	Quantities.	Walter S. Rae, Oliver Bldg., Pittsburgh, Pa.		Underground Construction Co., 130 N. Wells St., Chicago, Ill.		Kansas City Bridge Co., 215 Pershing Rd., Kansas City, Mo.		Fitzsimons & Connell, D. & D. Co., 10 S. LaSalle St., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
11	Pavement or concrete sidewalk removed and disposed of	Square yard	100	$ 1 00	$ 100 00	$ 2 00	$ 200 00	$ 2 00	$ 200 00	$ 1 00	$ 100 00
12	Concrete for structures, above present water level	Cubic yard	5,000	14 00	70,000 00	10 30	51,500 00	26 00	130,000 00	30 00	150,000 00
13	Concrete for structures below present water level	Cubic yard	1,700	14 00	23,800 00	58 00	98,600 00	30 00	51,000 00	30 00	51,000 00
14	Portland cement	Barrel	10,400	1 75	18,200 00	2 00	20,800 00	2 00	20,800 00	2 10	21,840 00
15	Hydrated lime	100-lb. bag	1,000	80	800 00	40	400 00	50	500 00	1 00	1,000 00
16	Reinforcing steel	Pound	240,000	035	8,400 00	048	11,520 00	055	13,200 00	05	12,000 00
17	Drilling and grouting reinforcing rods, west abutment, Cass St.	Lump sum			400 00		200 00		400 00		150 00
18	Masonry bolts and anchorages	Pound	101,000	02	2,020 00	025	2,525 00	02	2,020 00	04	4,040 00
19	Curb angles, fastenings, etc	Pound	220	08	17 60	10	22 00	06	13 20	15	33 00
20	Oak lumber	M. ft. B. M.	8.5	100 00	850 00	300 00	2,550 00	100 00	850 00	200 00	1,700 00
21	Roadway fences, stairways	M. ft. B. M.	3	80 00	240 00	125 00	375 00	125 00	375 00	200 00	600 00
22	Embankments and approaches	Cubic yard	3,200	1 00	3,200 00	2 25	7,200 00	1 50	4,800 00	1 25	4,000 00
23	Concrete pavement	Square yard	850	2 00	1,700 00	2 35	1,997 50	2 50	2,125 00	2 00	1,700 00
24	Asphalt pavement, including concrete base	Square yard	125	4 00	500 00	6 00	750 00	3 50	437 50	5 00	625 00
25	Gravel surfacing	Square yard	700	50	350 00	25	175 00	40	280 00	25	175 00
26	Concrete sidewalk	Square ft	1,560	27	421 20	25	390 00	35	546 00	30	468 00
27	Cinder sidewalk	Square ft	1,300	12	156 00	10	130 00	20	260 00	10	130 00
28	Combined curb and gutter	Linear ft	300	1 25	375 00	1 75	525 00	1 25	375 00	1 50	450 00
29	3-in. fibre conduit	Linear ft	100	30	30 00	45	45 00	30	30 00	40	40 00
30	6-in. vitrified pipe sewer	Linear ft	20	1 50	30 00	1 00	20 00	1 50	30 00	2 50	50 00
31	8-in. vitrified pipe sewer	Linear ft	60	2 00	120 00	1 30	78 00	2 50	150 00	3 00	180 00
32	18-in. vitrified pipe sewer	Linear ft	45	3 00	135 00	3 00	135 00	5 00	225 00	10 00	450 00
33	Gratings, covers, curbs, etc	Pound	4,500	08	360 00	05	225 00	10	450 00	07	315 00
34	Catch basin, etc	Units	3	112 00	336 00	85 00	225 00	100 00	300 00	100 00	300 00
35	Sewer manhole, etc	Units	2	112 00	224 00	85 00	170 00	150 00	300 00	150 00	300 00
36	Sewer manhole repaired-altered	Unit	1	16 00	16 00	25 00	25 00	50 00	50 00	50 00	50 00
37	Sump in transformer vaults	Units	3	32 00	96 00	5 00	15 00	25 00	75 00	25 00	75 00
38	Hydrant adjusted to new grade	Unit	1	24 00	24 00	50 00	50 00	50 00	50 00	125 00	125 00
39	Water pipe manhole adjusted	Units	4	48 00	192 00	40 00	160 00	50 00	200 00	30 00	120 00
40	For preserving and restoring the lawn and hedges of P. S. Co. plant	Lump sum			240 00		450 00		100 00		250 00
	Total				$255,327 80		$267,310 50		$296,341 70		$306,746 00

TABLE NO. 7—CONTRACT B7—SUBSTRUCTURE, SMITH'S HIGHWAY BRIDGE.

Canvass of Bids Received May 10, 1932.

Item No.	Item.	Unit.	Quantities.	Powers-Thompson Construction Co., 221 S. Chicago St., Joliet, Ill.		Congress Construction Co., 506 S. Wabash Ave., Chicago, Ill.		Macdonald Engineering Co., 1 N. LaSalle St., Chicago, Ill.		Tully Costello Co., 33 N. LaSalle St., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Earth excavation	Cubic yard	11,700	$ 0 60	$ 7,020 00	$ 0 34	$ 3,978 00	$ 0 24	$ 2,808 00	$2 00	$23,400 00
2	Rock excavation	Cubic yard	300	16 00	4,800 00	20 00	6,000 00	8 03	2,409 00	4 00	1,200 00
3	Concrete above el. +500.0	Cubic yard	1,250	8 50	10,625 00	11 50	14,375 00	13 81	17,262 50	8 00	10,000 00
4	Concrete below el. +500.0	Cubic yard	1,200	13 50	16,200 00	12 50	15,000 00	10 95	13,140 00	8 00	9,600 00
5	Portland cement	Barrel	3,675	1 60	5,880 00	1 40	5,145 00	2 56	9,408 00	1 85	6,798 75
6	Hydrated lime	Bag	600	80	480 00	60	360 00	1 00	600 00	85	510 00
7	Reinforcing steel	Pound	177,000	035	6,195 00	05	8,850 00	05	8,850 00	04	7,080 00
8	Masonry bolts and anchorages	Pound	2,270	10	227 00	10	227 00	20	454 00	10	227 00
	Total				$51,427 00		$53,935 00		$54,931 50		$58,815 75

TABLE NO. 7—Concluded.

Item No.	Unit.	Unit.	Quantities.	Joliet Bridge & Construction Co., 510 Morris Bldg., Joliet, Ill.		Union Bridge & Construction Co., 1205 Midland Bldg., Kansas City, Mo.		D. A. Chernus Construction Co., Minneapolis, Minn.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Earth excavation	Cubic yard	11,700	$ 2 00	$23,400 00	$ 0 247	$ 2,889 90	$ 2 00	$23,400 00
2	Rock excavation	Cubic yard	300	10 00	3,000 00	2 75	825 00	15 00	4,500 00
3	Concrete above el. +500.0	Cubic yard	1,250	9 00	11,250 00	27 85	34,812 50	14 50	18,125 00
4	Concrete below el. +500.0	Cubic yard	1,200	9 50	11,400 00	7 70	9,240 00	14 00	16,800 00
5	Portland cement	Barrel	3,675	1 80	6,615 00	2 70	9,922 50	1 50	5,512 50
6	Hydrated lime	Bag	600	70	420 00	1 80	1,080 00	1 50	900 00
7	Reinforcing steel	Pound	177,000	035	6,195 00	052	9,204 00	03	5,310 00
8	Masonry bolts and anchorages	Pound	2,270	10	227 00	20	454 00	10	227 00
	Total				$62,507 00		$68,427 90		$74,874 50

TABLE NO. 8—CONTRACT B8—SUPERSTRUCTURE FOR SMITH'S HIGHWAY BRIDGE.

Canvass of Bids Received July 12, 1932.

Item No.	Item.	Unit.	Quantities.	Vincennes Bridge Co., Vincennes, Ind.		Mississippi Valley Structural Steel Co., P. O. Box 299, Decatur, Ill.		McClintic-Marshall Co., Wrigley Bldg., Chicago, Ill.		Duffin Iron Co., 4837 S. Kedzie Ave., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Structural steel	Pound	2,500,000	$0 038	$95,000 00	$ 0 0383	$95,750 00	$ 0 0381	$95,250 00	$ 0 0385	$96,250 00
2	Cast steel and forgings	Pound	48,000	063	3,024 00	0613	2,942 40	08	3,840 00	085	4,080 00
3	Safety railing on viaduct structure	Linear ft	790	5 30	4,187 00	4 55	3,594 50	4 50	3,555 00	3 50	2,765 00
4	Concrete	Cubic yard	640	8 50	5,440 00	10 50	6,720 00	10 75	6,880 00	10 00	6,400 00
5	Portland cement	Barrel	960	1 50	1,440 00	1 28	1,228 80	1 40	1,344 00	1 50	1,440 00
6	Hydrated lime	Bag	320	65	208 00	53	169 60	1 00	320 00	70	224 00
7	Reinforcing steel	Pound	135,000	0315	4,252 50	0265	3,577 50	0297	4,010 00	03	4,050 00
8	24 Nav. lights with supports	Lump sum	24	--------	435 00	--------	380 00	--------	550 00	--------	600 00
	Total			--------	$113,986 50	--------	$114,362 80	--------	$115,749 00	--------	$115,809 00

TABLE NO. 8—Continued.

Item No.	Item.	Unit.	Quantities.	American Bridge Co., 208 S. LaSalle St., Chicago, Ill.		Midland Structural Steel Co., 1300 S. 54th Ave., Cicero, Ill.		Wisconsin Bridge & Iron Co., Milwaukee, Wis.		Worden-Allen Co., 208 S. LaSalle St., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Structural steel	Pound	2,500,000	$0 038	$95,000 00	$ 0 04	$100,000 00	$ 0 0425	$106,250 00	$0 0429	$107,250 00
2	Cast steel and forgings	Pound	48,000	08	3,840 00	083	3,984 00	0725	3,480 00	083	3,984 00
3	Safety railing on viaduct structure	Linear ft	790	5 00	3,950 00	4 00	3,160 00	4 46	3,523 40	5 50	4,345 00
4	Concrete	Cubic yard	640	12 30	7,872 00	10 00	6,400 00	10 90	6,976 00	9 00	5,760 00
5	Portland cement	Barrel	960	1 31	1,257 60	1 40	1,344 00	1 28	1,228 80	1 40	1,344 00
6	Hydrated lime	Bag	320	55	176 00	60	192 00	45	144 00	80	256 00
7	Reinforcing steel	Pound	135,000	03275	4,421 25	03	4,050 00	03	4,050 00	028	3,780 00
8	24 Nav. lights with supports	Lump sum	24	--------	575 00	--------	600 00	--------	450 00	--------	600 00
	Total			--------	$117,091 85	--------	$119,730 00	--------	$126,102 20	--------	$127,319 00

TABLE NO. 8—Concluded.

Item No.	Item.	Unit.	Quantities.	Hansell-Elcock Co., Chicago, Ill.		Milwaukee Bridge Co., Milwaukee, Wis.		R. C. Mahon Co., Detroit, Mich.		Strobel Construction Co., 53 W. Jackson Blvd., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Structural steel	Pound	2,500,000	$ 0 041	$102,500 00	$ 0 044	$110,000 00	$ 0 047	$117,500 00	$ 0 0484	$121,000 00
2	Cast steel and forgings	Pound	48,000	096	4,608 00	0975	4,680 00	08	3,840 00	105	5,040 00
3	Safety railing on viaduct structure	Linear ft	790	5 50	4,345 00	5 60	4,424 00	4 45	3,515 00	7 00	5,530 00
4	Concrete	Cubic yard	640	15 15	9,696 00	12 00	7,680 00	12 30	7,872 00	12 80	8,192 00
5	Portland cement	Barrel	960	1 62	1,555 20	1 40	1,344 00	1 40	1,344 00	1 50	1,440 00
6	Hydrated lime	Bag	320	1 00	320 00	60	192 00	60	192 00	65	208 00
7	Reinforcing steel	Pound	135,000	0336	4,536 00	035	4,725 00	04	5,400 00	057	7,695 00
8	24 Nav. lights with supports	Lump sum	24	--------	600 00	--------	750 00	--------	400 00	--------	420 00
	Total			--------	$128,160 20	--------	$133,795 00	--------	$140,063 00	--------	$149,525 00

TABLE NO. 9—CONTRACT B9—SUPERSTRUCTURE CASS STREET BRIDGE.

Canvass of Bids Received November 24, 1931.

Item No.	Item.	Unit.	Quantities.	John C. Paskins Co., 208 S. LaSalle St., Chicago, Ill.		Mississippi Valley Structural Steel Co., 20 N. Wacker Dr., Chicago, Ill.		Independent Bridge Co., Neville Island Branch, Pittsburgh, Pa.		Milwaukee Bridge Co., 3282 N. 34th St., Milwaukee, Wis.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Structural steel	Pound	1,810,000	$ 0 05	$90,500 00	$0 049	$88,690 00	$ 0 053	$95,930 00	$0 0528	$95,568 00
2	Structural castings of ordinary cast steel	Pound	38,000	10	3,800 00	11	4,180 00	09	3,420 00	0958	3,640 40
3	Structural castings of special cast steel	Pound	58,000	15	8,700 00	12	6,960 00	11	6,380 00	11	6,380 00
4	Machinery castings and cast steel	Pound	35,000	18	6,300 00	17	5,950 00	16	5,600 00	16	5,600 00
5	Steel forgings	Pound	9,500	16	1,520 00	20	1,900 00	15	1,425 00	163	1,548 50
6	Forged steel shafts	Pound	10,000	07	700 00	11	1,100 00	12	1,200 00	096	960 00
7	Cold rolled shafts	Pound	5,500	06	330 00	10	550 00	12	660 00	11	605 00
8	Miscellaneous machinery parts	Pound	2,500	15	375 00	22	550 00	30	750 00	30	750 00
9	Bronze and brass	Pound	800	40	320 00	42	336 00	50	400 00	50	400 00
10	Babbitt metal	Pound	400	24	96 00	40	160 00	70	280 00	80	320 00
11	Ornamental railings	Linear ft	550	5 00	2,750 00	7 00	3,850 00	7 00	3,850 00	6 00	3,300 00
12	Counterweight concrete	Cubic yard	490	11 50	5,635 00	8 00	3,920 00	10 00	4,900 00	7 75	3,797 50
13	Rubbed concrete finish	Square ft	2,200	10	220 00	075	165 00	10	220 00	10	220 00
14	Reinforcing metal	Pound	40,000	03	1,200 00	036	1,440 00	04	1,600 00	04	1,600 00
15	Timber and lumber	M. ft. B. M	65	65 00	4,225 00	70 00	4,550 00	70 00	4,550 00	70 00	4,550 00
16	Treating timber and lumber	M. ft. B. M	65	20 00	1,300 00	23 00	1,495 00	10 00	650 00	17 00	1,105 00
17	Asphalt plank pavement	Square yard	860	1 80	1,548 00	2 60	2,236 00	3 00	2,580 00	2 65	2,279 00
18	Concrete deck slab	Cubic yard	190	15 00	2,850 00	15 00	2,850 00	14 00	2,660 00	14 75	2,802 50
19	Concrete sidewalk finish	Square ft	2,700	05	135 00	04	108 00	10	270 00	04	108 00
20	Portland cement	Barrel	1,020	1 50	1,530 00	1 40	1,428 00	1 50	1,530 00	1 50	1,530 00
21	Hydrated lime	Bag	95	1 25	118 75	80	76 00	60	57 00	75	71 25
22	Electrical equipment complete	Lump sum			17,000 00		18,900 00		16,488 00		22,500 00
23	Operators' house, etc	Lump sum			2,500 00		6,874 00		6,000 00		5,800 00
	Total, Design "A"				$153,652 75		$158,268 00		$161,400 00		$165,435 15
	Total, Design "B"				157,842 00		162,468 00				
	Total, Design "C"				155,000 00		159,668 00				

TABLE NO. 9—Continued.

Item No.	Item.	Unit.	Quantities.	Lakeside Bridge & Steel Co., Milwaukee, Wis.		Strobel Construction Co., 53 W. Jackson St., Chicago, Ill.		Mt. Vernon Bridge Co., Mt. Vernon, Ohio.		Wisconsin Bridge & Iron Co., Milwaukee, Wis.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Structural steel	Pound	1,810,000	$0 0515	$93,215 00	$ 0 0517	$93,577 00	$ 0 055	$99,550 00	$ 0 0564	$102,084 00
2	Structural castings of ordinary cast steel	Pound	38,000	116	4,408 00	107	4,066 00	10	3,800 00	1231	4,677 80
3	Structural castings of special cast steel	Pound	58,000	127	7,366 00	1255	7,279 00	12	6,960 00	1208	7,006 40
4	Machinery castings and cast steel	Pound	35,000	161	5,635 00	195	6,825 00	18	6,300 00	1676	5,866 00
5	Steel forgings	Pound	9,500	186	1,767 00	208	1,976 00	21	1,995 00	2147	2,039 65
6	Forged steel shafts	Pound	10,000	136	1,360 00	165	1,650 00	13	1,300 00	1314	1,314 00
7	Cold rolled shafts	Pound	5,500	11	605 00	1185	651 75	11	605 00	0969	532 95
8	Miscellaneous machinery parts	Pound	2,500	232	580 00	293	732 50	33	825 00	2753	688 25
9	Bronze and brass	Pound	800	575	460 00	623	498 40	50	400 00	4606	368 48
10	Babbitt metal	Pound	400	42	168 00	90	360 00	30	120 00	7546	301 84
11	Ornamental railings	Linear ft	550	6 50	3,575 00	8 00	4,400 00	8 00	4,400 00	5 87	3,228 50
12	Counterweight concrete	Cubic yard	490	21 00	10,290 00	8 10	3,969 00	8 00	3,920 00	17 00	8,330 00
13	Rubbed concrete finish	Square ft	2,200	08	176 00	104	228 80	10	220 00	10	220 00
14	Reinforcing metal	Pound	40,000	03	1,200 00	047	1,880 00	045	1,800 00	0365	1,460 00
15	Timber and lumber	M. ft. B. M	65	55 00	3,575 00	77 25	5,021 25	76 00	4,940 00	68 13	4,428 45
16	Treating timber and lumber	M. ft. B. M	65	14 00	910 00	28 70	1,865 50	28 00	1,820 00	17 00	1,105 00
17	Asphalt plank pavement	Square yard	860	2 13	1,831 80	2 82	2,425 20	3 00	2,580 00	2 58	2,218 80
18	Concrete deck slab	Cubic yard	190	13 00	2,470 00	15 35	2,916 50	16 00	3,040 00	13 50	2,565 00
19	Concrete sidewalk finish	Square ft	2,700	11	297 00	0425	114 75	05	135 00	05	135 00
20	Portland cement	Barrel	1,020	1 50	1,530 00	1 40	1,428 00	1 40	1,428 00	1 07	1,091 40
21	Hydrated lime	Bag	95	60	57 00	1 25	118 75	1 20	114 00	225	21 38
22	Electrical equipment complete	Lump sum			22,500 00		19,440 00		18,400 00		17,000 00
23	Operators' house, etc	Lump sum			5,000 00		8,400 00		8,000 00		6,500 00
	Total, Design "A"				$168,975 80		$169,823 40		$172,652 00		$173,182 90
	Total, Design "B"				178,911 00		174,518 00		177,252 00		181,150 00
	Total, Design "C"				174,032 00		169,873 00		172,452 00		175,500 00

TABLE NO. 9—Concluded.

Item No.	Item.	Unit.	Quantities.	American Bridge Co., Frick Bldg., Pittsburgh, Pa.		F. K. Ketler Co., 105 W. Monroe St., Chicago, Ill.		Permanent Construction Co., 208 S. LaSalle St., Chicago, Ill.		Ketler-Elliott Co., 3101 S. California Ave., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Structural steel	Pound	1,810,000	$ 0 0594	$107,514 00	$ 0 0512	$92,672 00	$0 05737	$103,839 70	$ 0 0677	$122,537 00
2	Structural castings of ordinary cast steel	Pound	38,000	0927	3,522 60	11	4,180 00	11	4,180 00	10	3,800 00
3	Structural castings of special cast steel	Pound	58,000	0922	5,347 60	16	9,280 00	13	7,540 00	10	5,800 00
4	Machinery castings and cast steel	Pound	35,000	172	6,020 00	25	8,750 00	20	7,000 00	18	6,300 00
5	Steel forgings	Pound	9,500	1943	1,845 85	25	2,375 00	22	2,090 00	20	1,900 00
6	Forged steel shafts	Pound	10,000	0862	862 00	20	2,000 00	13	1,300 00	095	950 00
7	Cold rolled shafts	Pound	5,500	0865	475 75	18	990 00	085	467 50	095	522 50
8	Miscellaneous machinery parts	Pound	2,500	3568	892 00	50	1,250 00	50	1,250 00	365	912 50
9	Bronze and brass	Pound	800	6025	482 00	65	520 00	60	480 00	61	488 00
10	Babbitt metal	Pound	400	8844	353 76	1 00	400 00	25	100 00	90	360 00
11	Ornamental railings	Linear ft	550	8 25	4,537 50	7 00	3,850 00	7 00	3,850 00	7 20	3,960 00
12	Counterweight concrete	Cubic yard	490	7 75	3,797 50	14 00	6,860 00	7 53	3,689 70	10 00	4,900 00
13	Rubbed concrete finish	Square ft	2,200	10	220 00	10	220 00	08	176 00	05	110 00
14	Reinforcing metal	Pound	40,000	0365	1,460 00	04	1,600 00	035	1,400 00	045	1,800 00
15	Timber and lumber	M. ft. B. M	65	67 00	4,355 00	75 00	4,875 00	83 00	5,395 00	100 00	6,500 00
16	Treating timber and lumber	M. ft. B. M	65	18 00	1,170 00	15 00	975 00	14 65	952 25	14 50	942 50
17	Asphalt plank pavement	Square yard	860	2 00	1,720 00	2 00	1,720 00	3 00	2,580 00	2 25	1,935 00
18	Concrete deck slab	Cubic yard	190	14 75	2,802 50	17 00	3,230 00	14 90	2,831 00	17 00	3,230 00
19	Concrete sidewalk finish	Square ft	2,700	04	108 00	30	810 00	06	162 00	06	162 00
20	Portland cement	Barrel	1,020	1 35	1,377 00	2 00	2,040 00	1 31	1,336 20	1 84	1,876 80
21	Hydrated lime	Bag	95	50	47 50	2 00	190 00	1 20	114 00	825	78 38
22	Electrical equipment complete	Lump sum			22,950 00		23,000 00		23,000 00		21,500 00
23	Operators' house, etc	Lump sum			7,083 00		8,000 00		8,500 00		7,200 00
	Total, Design "A"				$178,943 56		$179,787 00		$182,233 35		$197,764 68
	Total, Design "B"				185,191 86		180,355 00		193,180 87		202,374 18
	Total, Design "C"						181,295 00		187,646 54		

TABLE NO. 10—CONTRACT B10—SUBSTRUCTURE AND APPROACHES, HILLIARD BRIDGE, OTTAWA.

Canvass of Bids Received August 30, 1932.

Item No.	Item.	Unit.	Quantities.	Macdonald Engineering Co., 1 N. LaSalle St., Chicago, Ill.		Green and Sons Co., 6 N. Michigan Ave., Chicago, Ill.		A. J. Forschner Construction Co., 39th St. and 52d Ave., Cicero, Ill.		Unit.	Quantities.	*Independent Bridge Co., Neville Island B ranch, Pittsburgh, Pa.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.			Price.	Amount.
1	Clearing and grubbing	Lump sum			$ 3,600 00		$ 1,000 00		$ 1,500 00	Lump sum			$ 500 00
2	Earth excavation	Cubic yd	4,900	$ 0 51	2,499 00	$ 1 04	5,096 00	$ 1 50	7,350 00	Cubic yd	4,900	$ 1 00	4,900 00
3	Rock excavation	Cubic yd	265	4 70	1,245 50	15 00	3,975 00	5 00	1,325 00	Cubic yd	265	12 00	3,180 00
4	Pavement or concrete sidewalk removed and disposed of	Square yd	2,320	22	510 40	1 00	2,320 00	1 50	3,480 00	Square yd	2,320	1 10	2,552 00
5	Masonry in retaining walls, etc., removed and disposed of	Cubic yd	40	8 76	350 40	10 00	400 00	12 00	480 00	Cubic yd	40	10 00	400 00
6	Concrete above el. +460.0	Cubic yd	1,505	14 30	21,521 50	9 60	14,448 00	11 00	16,555 00	Cubic yd	1,497	10 00	14,970 00
7	Concrete below el. +460.0	Cubic yd	1,260	16 00	20,160 00	20 00	25,200 00	22 00	27,720 00	Cubic yd	1,298	19 00	24,662 00
8	Portland cement	Barrel	4,100	1 72	7,052 00	2 00	8,200 00	1 75	7,175 00	Barrel	4,145	2 00	8,290 00
9	Hydrated lime	Bag	100	1 00	100 00	1 00	100 00	1 00	100 00	Bag	100	1 00	100 00
10	Reinforcing steel	Pound	196,000	036	7,056 00	04	7,840 00	04	7,840 00	Pound	136,000	05	6,800 00
11	Masonry bolts and anchorages	Pound	2,100	02	42 00	07	147 00	02	42 00	Pound	2,100	08	168 00
12	Embankment—North approach	Cubic yd	8,000	41	3,280 00	30	2,400 00	25	2,000 00	Cubic yd	8,000	33	2,640 00
13	Embankment—South approach	Cubic yd	23,000	42	9,660 00	30	6,900 00	25	5,750 00	Cubic yd	20,000	33	6,600 00
14	Concrete pavement	Square yd	6,950	1 64	11,398 00	1 20	8,340 00	2 50	17,375 00	Square yd	6,950	1 25	8,687 50
15	Concrete sidewalk	Square ft	11,600	22	2,552 00	20	2,320 00	20	2,320 00	Square ft	11,600	20	2,320 00
16	Concrete curb	Lin. ft	120	1 20	144 00	1 00	120 00	1 00	120 00	Lin. ft	120	1 00	120 00
17	10-in. vitrified pipe sewer	Lin. ft	325	1 00	325 00	1 00	325 00	80	260 00	Lin. ft	325	2 00	650 00
18	12-in. vitrified pipe sewer	Lin. ft	650	1 12	728 00	1 00	650 00	1 00	650 00	Lin. ft	650	2 50	1,625 00
19	Sewer inlets	Units	10	40 00	400 00	50 00	500 00	30 00	300 00	Units	10	100 00	1,000 00
20	Comb. manhole and catch basin	Units	3	65 00	195 00	120 00	360 00	50 00	150 00	Units	3	120 00	360 00
21	Open ditch, unpaved	Lin. ft	100	60	60 00	50	50 00	50	50 00	Lin. ft	100	50	50 00
22	Open ditch, paved	Lin. ft	70	1 50	105 00	1 00	70 00	1 00	70 00	Lin. ft	70	1 00	70 00
23	Concrete railing	Lin. ft	890	3 30	2,937 00	4 50	4,005 00	4 00	3,560 00	Lin. ft	890	4 00	3,560 00
24	Roadway fence	Lin. ft	490	36	176 40	50	245 00	1 00	490 00	Lin. ft	490	1 00	490 00
25	Light. system, etc.; No. App.	Lump sum			1,500 00		2,250 00		1,800 00	Lump sum			2,000 00
26	Cultivated and seeded	Acre	2	100 00	200 00	100 00	200 00	100 00	200 00	Acre	2	100 00	200 00
27	Rip-rap	Square yd	500	1 00	500 00	3 00	1,500 00	1 00	500 00	Square yd	500	4 50	2,250 00
	Total				$98,297 20		$98,961 00		$109,162 00				$99,144 50

* The Independent Bridge Company's amounts are based on quantities taken from their design of an alternate cantilever bridge.

TABLE NO. 11—CONTRACT B11—SUPERSTRUCTURE, HILLIARD BRIDGE, OTTAWA.

Canvass of Bids Received November 4, 1932.

Item No.	Item.	Unit.	Quantities.	Wisconsin Bridge & Iron Co., 5023 N. 35th St., Milwaukee, Wis.		McClintic-Marshall Corp., Wrigley Bldg., Chicago, Ill.		Independent Bridge Co., Neville Island Branch, Pittsburgh, Pa.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Structural carbon steel	Pound	1,820,000	$0 036	$65,520 00	$ 0 0348	$63,336 00	$ 0 037	$67,340 00
2	Structural silicon steel	Pound	1,480,000	041	60,680 00	0423	62,604 00	044	65,120 00
3	Nickel steel eye-bars	Pound	150,000	047	7,050 00	0788	11,820 00	06	9,000 00
4	Pins and steel forgings	Pound	42,000	06	2,520 00	0679	2,851 80	06	2,520 00
5	Cast steel in shoes, etc	Pound	55,000	06	3,300 00	0687	3,778 50	06	3,300 00
6	Cast steel in expansion joints	Pound	45,000	07	3,150 00	0687	3,091 50	09	4,050 00
7	Bronze	Pound	1,000	23	230 00	3527	352 70	30	300 00
8	Steel handrailing	Linear ft	4,020	1 75	7,035 00	2 11	8,482 20	1 95	7,839 00
9	Concrete	Cubic yard	700	9 00	6,300 00	10 00	7,000 00	10 00	7,000 00
10	Portland cement	Barrel	1,050	1 40	1,470 00	1 59	1,669 50	1 50	1,575 00
11	Hydrated lime	Bag	420	40	168 00	74	310 80	40	168 00
12	Reinforcing steel	Pound	135,000	024	3,240 00	0256	3,456 00	025	3,375 00
13	Unloading and placing each precast sidewalk slab	Units	538	50	269 00	75	403 50	50	269 00
14	Bridge and navigation lights	Lump sum			2,500 00		2,625 00		2,484 00
15	Preparation of bidding plans	Lump sum			2,500 00		2,500 00		2,500 00
	Total				$165,932 00		$174,281 50		$176,840 00

TABLE NO. 11—Concluded.

Item No.	Item.	Unit.	Quantities.	Duffin Iron Co., 4837 S. Kedzie Ave., Chicago, Ill.		American Bridge Co., 208 S. LaSalle St., Chicago, Ill.		Mississippi Valley Structural Steel Co., Decatur, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Structural carbon steel	Pound	1,820,000	$0 037	$67,340 00	$ 0 04	$72,800 00	$ 0 041	$74,620 00
2	Structural silicon steel	Pound	1,480,000	046	68,080 00	048	71,040 00	049	72,520 00
3	Nickel steel eye-bars	Pound	150,000	075	11,250 00	08	12,000 00	086	12,900 00
4	Pins and steel forgings	Pound	42,000	078	3,276 00	088	3,696 00	082	3,444 00
5	Cast steel in shoes, etc	Pound	55,000	0665	3,657 50	073	4,015 00	088	4,840 00
6	Cast steel in expansion joints	Pound	45,000	0725	3,262 50	094	4,230 00	098	4,410 00
7	Bronze	Pound	1,000	45	450 00	43	4,300 00	40	400 00
8	Steel handrailing	Linear ft	4,020	2 10	8,442 00	2 10	8,442 00	1 80	7,236 00
9	Concrete	Cubic yard	700	9 00	6,300 00	10 88	7,616 00	12 00	8,400 00
10	Portland cement	Barrel	1,050	1 60	1,680 00	1 70	1,785 00	1 80	1,890 00
11	Hydrated lime	Bag	420	65	273 00	70	294 00	75	315 00
12	Reinforcing steel	Pound	135,000	025	3,375 00	027	3,645 00	028	3,780 00
13	Unloading and placing each precast sidewalk slab	Units	538	1 00	538 00	1 00	538 00	1 00	538 00
14	Bridge and navigation lights	Lump sum			2,560 00		2,814 00		2,750 00
15	Preparation of bidding plans	Lump sum			2,500 00		2,500 00		2,500 00
	Total				$182,984 00		$199,715 00		$200,543 00

TABLE NO. 12—CONTRACT B12—SUBSTRUCTURE McDONOUGH STREET BRIDGE.

Canvass of Bids Received August 16, 1932.

Item No.	Item.	Unit.	Quantities.	Powers-Thompson Construction Co., 221 S. Chicago St., Joliet, Ill.		Herlihy Mid-Continent Co., 20 N. Wacker Dr., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.
1	Removing present bridge	Lump sum			$ 8,300 00		$11,500 00
2	Earth excavation	Cubic yard	2,800	$ 0 75	2,100 00	$ 1 00	2,800 00
3	Rock excavation	Cubic yard	800	7 00	5,600 00	7 00	5,600 00
4	Removing brick pavement	Square yard	360	50	180 00	1 00	360 00
5	Trench for submarine cable	Linear ft	220	34 00	7,480 00	11 00	2,420 00
6	Concrete above present water level	Cubic yard	1,650	7 70	12,705 00	10 60	17,490 00
7	Concrete below present water level	Cubic yard	1,350	7 70	10,395 00	10 60	14,310 00
8	Portland cement	Barrel	4,500	1 70	7,650 00	1 75	7,875 00
9	Hydrated lime	100-lb. bag	450	50	225 00	60	270 00
10	Placing masonry bolts	Pound	47,000	01	470 00	02	940 00
11	Reinforcing steel	Pound	100,000	03½	3,500 00	03¼	3,250 00
12	Oak lumber	M. ft. B. M.	2	150 00	300 00	190 00	380 00
13	Channeling	Square ft	240	60	144 00	1 00	240 00
14	6-in. vitrified pipe	Linear ft	60	80	48 00	90	54 00
15	Drilling and grouting	Linear ft	60	50	30 00	1 00	60 00
16	3-in. fibre conduit	Linear ft	10	30	3 00	50	5 00
17	Removing wall, Van Buren Street	Cubic yard	64	4 00	256 00	5 50	352 00
18	Concrete in river wall	Cubic yard	200	7 70	1,540 00	6 25	1,250 00
19	Fill at Van Buren Street	Cubic yard	200	25	50 00	1 50	300 00
	Total				$60,976 00		$69,456 00

TABLE NO. 13—CONTRACT B13—JEFFERSON STREET BRIDGE APPROACHES.

Canvass of Bids Received August 30, 1932.

Item No.	Item.	Unit.	Quantities.	Powers-Thompson Construction Co., 221 S. Chicago St., Joliet, Ill.	
				Price.	Amount.
1	Rock excavation	Cubic yard	300	$ 6 00	$ 1,800 00
2	Channeling	Square foot	300	60	180 00
3	Earth excavation	Cubic yard	4,000	50	2,000 00
4	Masonry walls, reinforcing concrete slabs removed and disposed of	Cubic yard	300	1 00	300 00
5	Pavement or concrete sidewalk removed and disposed of	Square yard	1,500	50	750 00
6	Sand fill	Cubic yard	8,000	95	7,600 00
7	Concrete	Cubic yard	1,400	7 60	10,640 00
8	Portland cement	Barrel	3,000	1 70	5,100 00
9	Hydrated lime	Bag	300	50	150 00
10	Reinforcing steel	Pound	150,000	03½	5,250 00
11	Waterproofing	Square	20	4 50	90 00
12	Concrete pavement	Square yard	750	1 10	825 00
13	Gravel surfacing	Square yard	1,000	40	400 00
14	Concrete sidewalk	Square foot	3,400	15	510 00
15	Wearing surface on reinforced concrete sidewalks and stair treads	Square foot	2,400	03	72 00
16					
17	Southern pine or Douglas fir for temporary stairways	M. ft. B. M	4	125 00	500 00
18	White oak for temporary stairways	M. ft. B. M	2	135 00	270 00
19	Temporary sidewalks, etc., removed and disposed of	M. ft. B. M	20	60 00	1,200 00
20					
21	Structural steel in railings, etc	Pound	12,600	07	882 00
22	Concrete railing	Linear foot	21	5 00	105 00
23	Catch basin or sewer manhole repaired or altered	Units	2	10 00	20 00
24	New standard catch basin	Units	7	50 00	350 00
25	New standard sewer manhole	Unit	1	60 00	60 00
26					
27	Concrete in special curb inlet structures	Cubic yard	100	10 00	1,000 00
28	Cast iron gratings, curbs, etc	Pound	9,000	03½	315 00
29	6-in. vitrified pipe sewer	Linear foot	60	60	36 00
30	8-in. vitrified pipe sewer	Linear foot	125	85	106 25
31	9-in. vitrified pipe sewer	Linear foot	60	90	54 00
32					
33					
34	30-in. vitrified pipe sewer	Linear foot	260	4 00	1,040 00

35	30-in. concrete sewer	Linear foot	190	6 00	1,140 00
36					
37	New water manholes	Units	4	50 00	200 00
38	Fire hydrant to new grade	Unit	1	50 00	50 00
39	Fire hydrant relocated	Unit	1	100 00	100 00
40	2-in. water pipe in place	Linear foot	20	3 50	70 00
41	3-in. fibre conduit in concrete	Linear foot	1,800	50	900 00
	Total				$44,065 25

TABLE NO. 14—CONTRACT B14—CASS STREET BRIDGE APPROACHES.

Canvass of Bids Received August 30, 1932.

Item No.	Item.	Unit.	Quantities.	Powers-Thompson Construction Co., 221 S. Chicago St., Joliet, Ill.		L. E. Myers Co., 20 N. Wacker Dr., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.
1	Rock excavation	Cubic yard	100	$ 6 00	$ 600 00	$ 5 00	$ 500 00
2							
3	Earth excavation	Cubic yard	3,500	50	1,750 00	85	2,975 00
4	Masonry walls, reinforced concrete slabs removed and disposed of	Cubic yard	100	1 00	100 00	4 25	425 00
5	Pavement or concrete sidewalk removed and disposed of	Square yard	1,200	50	600 00	40	480 00
6	Sand fill	Cubic yard	7,000	95	6,650 00	1 00	7,000 00
7	Concrete	Cubic yard	1,000	8 05	8,050 00	8 00	8,000 00
8	Portland cement	Barrel	2,200	1 70	3,740 00	1 82	4,004 00
9	Hydrated lime	Bag	250	50	125 00	72	180 00
10	Reinforcing steel	Pound	110,000	035	3,850 00	031	3,410 00
11	Waterproofing	Square	4	4 50	18 00	8 00	32 00
12	Concrete pavement	Square yard	1,500	1 10	1,650 00	1 60	2,400 00
13	Gravel surfacing	Square yard	70	40	28 00	53	37 10
14	Concrete sidewalk	Square foot	4,500	15	675 00	15	675 00
15	Wearing surface on reinforced concrete sidewalks and stair treads	Square foot	800	03	24 00	07	56 00
16	Safety treads	Linear foot	170	80	136 00	89	151 30
17	Southern pine or Douglas fir for temporary stairways	M. ft. B. M.	2	125 00	250 00	75 00	150 00
18	White oak for temporary stairways	M. ft. B. M.	1	135 00	135 00	130 00	130 00
19	Temporary sidewalks, etc., removed and disposed of	M. ft. B. M.	20	60 00	1,200 00	63 00	1,260 00
20	Galvanized wrought iron pipe railing	Linear foot	380	5 00	1,900 00	6 00	2,280 00

TABLE NO. 14—Concluded.

Item No.	Item.	Unit.	Quantities.	Powers-Thompson Construction Co., 221 S. Chicago St., Joliet, Ill.		L. E. Myers Co., 20 N. Wacker Dr., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.
21	Structural steel in railings, etc.	Pound	9,600	07	672 00	0624	599 04
22	Concrete railing	Linear foot	17	5 00	85 00	11 00	187 00
23	Catch basin or sewer manhole repaired or altered	Units	7	10 00	70 00	17 10	119 70
24	New standard catch basin	Units	4	50 00	200 00	65 27	261 08
25	New standard sewer manhole	Units	2	60 00	120 00	80 00	160 00
26	Special sewer manhole "A"	Unit	1	200 00	200 00	210 00	210 00
27	Concrete in special curb inlet structures	Cubic yard	100	10 00	1,000 00	18 00	1,800 00
28	Cast iron gratings, curbs, etc.	Pound	9,500	035	332 50	05	475 00
29	6-in. vitrified pipe sewer	Linear foot	60	60	36 00	65	39 00
30	8-in. vitrified pipe sewer	Linear foot	120	85	102 00	75	90 00
31	9-in. vitrified pipe sewer	Linear foot	16	90	14 40	1 16	18 56
32	12-in. vitrified pipe sewer	Linear foot	12	1 05	12 60	2 65	31 80
33	24-in. vitrified pipe sewer	Linear foot	105	2 20	231 00	6 39	670 95
34	30-in. vitrified pipe sewer	Linear foot	175	4 00	700 00	9 29	1,625 75
35							
36	Existing water manholes raised and altered	Unit	1	10 00	10 00	45 60	45 60
37	New water manholes	Unit	1	50 00	50 00	78 66	78 66
38	Fire hydrant to new grade	Unit	1	50 00	50 00	40 00	40 00
39							
40	2-in. water pipe in place	Linear foot	25	3 50	87 50	60	15 00
41	3-in. fibre conduit in concrete	Linear foot	1,400	50	700 00	45	630 00
	Total				$36,154 00		$41,242 54

TABLE NO. 15—CONTRACT B15—SUPERSTRUCTURE, McDONOUGH STREET BRIDGE, JOLIET.

Canvass of Bids Received November 4, 1932.

Item No.	Item.	Unit.	Quantities.	Mississippi Valley Structural Steel Co., Decatur, Ill.		Lakeside Bridge & Steel Co., 3200 W. Villard Ave., Milwaukee, Wis.		American Bridge Co., 208 S. LaSalle St., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Structural steel	Pound	1,850,000	$ 0 046	$85,100 00	$ 0 045	$83,250 00	$ 0 0483	$89,355 00
2	Structural castings of ordinary cast steel	Pound	42,000	075	3,150 00	11	4,620 00	094	3,948 00
3	Structural castings of special cast steel	Pound	58,000	085	4,930 00	11	6,380 00	085	4,930 00
4	Machinery castings of ordinary cast steel	Pound	30,000	10	3,000 00	16	4,800 00	165	4,950 00
5	Steel forgings	Pound	7,500	10	750 00	176	1,320 00	174	1,305 00
6	Forged steel shafts	Pound	10,600	06	636 00	12	1,272 00	08	848 00
7	Cold rolled shafts	Pound	500	06	30 00	20	100 00	08	40 00
8	Speed reducers, etc	Lump sum			2,200 00		2,730 00		2,690 00
9	Miscellaneous machinery parts	Pound	3,500	11	385 00	164	574 00	35	1,225 00
10	Bronze and brass	Pound	2,400	25	600 00	45	1,080 00	36	864 00
11	Babbitt metal	Pound	100	35	35 00	75	75 00	80	80 00
12	Ornamental railings	Linear foot	1,000	5 60	5,600 00	5 28	5,280 00	5 80	5,800 00
13	Counterweight concrete	Cubic yard	350	6 00	2,100 00	8 00	2,800 00	8 00	2,800 00
14	Rubbed concrete finish	Square foot	2,200	06	132 00	05	110 00	10	220 00
15	Reinforcing metal	Pound	55,000	028	1,540 00	025	1,375 00	03	1,650 00
16	Timber and lumber	M. ft. B. M.	45	50 00	2,250 00	65 00	2,925 00	65 00	2,925 00
17	Treating timber and lumber	M. ft. B. M.	45	12 00	540 00	14 00	630 00	20 00	900 00
18	Asphalt plank pavement	Square yard	500	3 36	1,680 00	2 63	1,315 00	2 00	1,000 00
19	Concrete in deck slab	Cubic yard	250	12 00	3,000 00	12 00	3,000 00	14 00	3,500 00
20	Wearing surface on concrete sidewalks	Square foot	4,200	04	168 00	03	126 00	05	210 00
21	Portland cement	Barrel	850	1 70	1,445 00	1 60	1,360 00	1 80	1,530 00
22	Hydrated lime	Bag	100	50	50 00	60	60 00	60	60 00
23	Electrical equipment, except as noted	Lump sum			19,000 00		17,619 00		19,600 00
24	Electrical work for C. & I. V. R. R. Co	Lump sum			1,600 00		1,404 00		1,775 00
25	Street car rails, splice bars and bolts	Pound	75,000	03	2,250 00	0426	3,195 00	053	3,975 00
26	Break in rail castings	Pound	12,000	105	1,260 00	125	1,500 00	12	1,440 00
27	4 gates and 4 "Danger" signs	Lump sum			60 00		100 00		155 00
	Total				$143,491 00		$149,000 00		$157,775 00

TABLE NO. 16—CONTRACT B19—OPERATORS' HOUSES FOR JOLIET BRIDGES.

Canvass of Bids Received May 10, 1932.

Item No.	Item.	Unit.	Quantities.	Schmidt Bros. Construction Co., 22 E. Huron St., Chicago, Ill.		J. T. Schless & Co., Inc., 1017 Burlington Ave., Downers Grove, Ill.		Hansen & Petersen Co., Allen and DesPlaines Sts., Joliet, Ill.		C. A. Moses Construction Co., 176 W. Adams St., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
	Proposal "A"										
A1	Ruby Street	Lump sum			$7,700 00		$8,445 00		$8,829 00		$9,112 00
A2	Jackson Street	Lump sum			7,500 00		8,445 00		8,663 00		8,644 00
A3	Cass Street	Lump sum			7,700 00		8,445 00		8,647 00		8,628 00
A4	Jefferson Street	Lump sum			7,700 00		8,445 00		8,629 00		8,610 00
A5	McDonough Street	Lump sum			7,500 00		8,445 00		8,705 00		8,986 00
	Total, Design "A"				$38,100 00		$42,225 00		$43,473 00		$43,980 00
	Proposal "B"										
B1	Ruby Street	Lump sum			$7,450 00		$7,965 00		$7,979 00		$8,612 00
B2	Jackson Street	Lump sum			7,250 00		7,965 00		7,813 00		8,144 00
B3	Cass Street	Lump sum			7,450 00		7,965 00		7,797 00		8,128 00
B4	Jefferson Street	Lump sum			7,450 00		7,965 00		7,779 00		8,110 00
B5	McDonough Street	Lump sum			7,250 00		7,965 00		7,855 00		8,486 00
	Total, Design "B"				$36,850 00		$39,825 00		$39,223 00		$41,480 00
	Proposal "C"										
C1	Ruby Street	Lump sum			$7,650 00		$8,370 00		$8,679 00		$9,072 00
C2	Jackson Street	Lump sum			7,450 00		8,370 00		8,513 00		8,604 00
C3	Cass Street	Lump sum			7,650 00		8,370 00		8,497 00		8,588 00
C4	Jefferson Street	Lump sum			7,650 00		8,370 00		8,479 00		8,570 00
C5	McDonough Street	Lump sum			7,450 00		8,370 00		8,555 00		8,946 00
	Total, Design "C"				$37,850 00		$41,850 00		$42,723 00		$43,780 00
	Certified check				$2,000 00		$2,000 00		$2,250 00		$2,250 00

TABLE NO. 16—Concluded.

Item No.	Item.	Unit.	Quantities.	George W. Lindquist, Marengo and St. Charles, Ill.		George P. Cullen, Inc., 2940 W. Lake St., Chicago, Ill.		E. W. Sproul Construction Co., 2001 W. Pershing Rd., Chicago, Ill.		C. E. Carson Co., 601 St. Clair St., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
	Proposal "A"										
A1	Ruby Street	Lump sum			$9,000 00		$9,050 00		$9,472 00		$11,818 00
A2	Jackson Street	Lump sum			8,700 00		9,185 00		9,700 00		12,079 00
A3	Cass Street	Lump sum			9,000 00		9,170 00		9,472 00		11,862 00
A4	Jefferson Street	Lump sum			9,000 00		9,150 00		9,472 00		11,858 00
A5	McDonough Street	Lump sum			8,700 00		8,875 00		9,700 00		11,515 00
	Total, Design "A"				$44,400 00		$45,430 00		$47,816 00		$59,132 00
	Proposal "B"										
B1	Ruby Street	Lump sum			$8,700 00		$8,505 00		$9,061 00		$11,403 00
B2	Jackson Street	Lump sum			8,400 00		8,640 00		9,286 00		11,664 00
B3	Cass Street	Lump sum			8,700 00		8,620 00		9,061 00		11,447 00
B4	Jefferson Street	Lump sum			8,700 00		8,605 00		9,061 00		11,443 00
B5	McDonough Street	Lump sum			8,400 00		8,325 00		9,286 00		11,101 00
	Total, Design "B"				$42,900 00		$42,695 00		$45,755 00		$57,058 00
	Proposal "C"										
C1	Ruby Street	Lump sum			$8,600 00		$9,010 00		$9,432 00		$11,584 00
C2	Jackson Street	Lump sum			8,300 00		9,145 00		9,660 00		11,844 00
C3	Cass Street	Lump sum			8,600 00		9,130 00		9,432 00		11,628 00
C4	Jefferson Street	Lump sum			8,600 00		9,110 00		9,432 00		11,623 00
C5	McDonough Street	Lump sum			8,300 00		8,835 00		9,660 00		11,281 00
	Total, Design "C"				$42,400 00		$45,230 00		$47,616 00		$57,960 00
	Certified check				$2,220 20		$2,400 00		$2,500 00		$3,000 00

TABLE NO. 17—CONTRACT B20—SUPERSTRUCTURE, ILLINOIS RIVER BRIDGE, MARSEILLES.

Canvass of Bids Received July 12, 1932.

Item No.	Item.	Unit.	Quantities.	Mississippi Valley Structural Steel Co., Box 299, Decatur, Ill.		Duffin Iron Co., 4837 S. Kedzie Ave., Chicago, Ill.		Vincennes Bridge Co., Vincennes, Ind.		Midland Structural Steel Co., 1300 S. 54th Ave., Cicero, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Structural steel	Pound	1,410,000	$ 0 0367	$51,747 00	$ 0 038	$53,580 00	$ 0 0378	$53,298 00	$ 0 0385	$54,285 00
2	Cast steel and steel forgings	Pound	22,000	0633	1,392 60	074	1,628 00	063	1,386 00	068	1,496 00
3	Safety railing on viaduct structure	Linear foot	200	4 95	990 00	3 50	700 00	5 80	1,160 00	4 00	800 00
4	Concrete	Cubic yard	370	11 60	4,292 00	10 00	3,700 00	8 50	3,145 00	10 00	3,700 00
5	Portland cement	Barrel	560	1 20	672 00	1 50	840 00	1 50	840 00	1 35	756 00
6	Hydrated lime	Bag	200	53	106 00	75	150 00	65	130 00	60	120 00
7	Reinforcing steel	Pound	80,000	0265	2,120 00	029	2,320 00	0315	2,520 00	03	2,400 00
8	Removing and disposing of existing bridge	Lump sum			3,000 00		2,400 00		3,150 00		2,750 00
	Total				$64,319 60		$65,318 00		$65,629 00		$66,307 00

TABLE NO. 17—Continued.

Item No.	Item.	Unit.	Quantities.	Worden-Allen Co., 208 S. LaSalle St., Chicago, Ill.		McClintic-Marshall Co., Wrigley Bldg., Chicago, Ill.		American Bridge Co., 208 S. LaSalle St., Chicago, Ill.		Wisconsin Bridge & Iron Co., Milwaukee, Wis.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Structural steel	Pound	1,410,000	$ 0 0404	$56,964 00	$ 0 0384	$54,144 00	$0 0399	$56,259 00	$ 0 042	$59,220 00
2	Cast steel and steel forgings	Pound	22,000	074	1,628 00	0725	1,595 00	0675	1,485 00	0739	1,625 80
3	Safety railing on viaduct structure	Linear foot	200	5 70	1,140 00	4 70	940 00	5 00	1,000 00	5 35	1,070 00
4	Concrete	Cubic yard	370	8 50	3,145 00	10 75	3,978 00	12 30	4,551 00	12 00	4,440 00
5	Portland cement	Barrel	560	1 30	728 00	1 40	784 00	1 14	638 40	1 24	694 40
6	Hydrated lime	Bag	200	80	160 00	1 00	200 00	60	120 00	45	90 00
7	Reinforcing steel	Pound	80,000	027	2,160 00	0275	2,232 00	02945	2,356 00	0295	2,360 00
8	Removing and disposing of existing bridge	Lump sum			4,000 00		6,500 00		4,500 00		2,500 00
	Total				$69,925 00		$70,373 00		$70,909 40		$72,000 20

TABLE NO. 17—Concluded.

Item No.	Item.	Unit.	Quantities.	Hansell-Elcock Co., Chicago, Ill.		R. C. Mahon Co., Detroit, Mich.		Strobel Construction Co., 53 W. Jackson Blvd., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Structural steel	Pound	1,410,000	$ 0 041	$57,810 00	$ 0 0475	$66,975 00	$ 0 0496	$69,936 00
2	Cast steel and steel forgings	Pound	22,000	0975	2,145 00	08	1,760 00	105	2,310 00
3	Safety railing on viaduct structure	Linear foot	200	5 50	1,100 00	4 85	970 00	9 00	1,800 00
4	Concrete	Cubic yard	370	15 40	5,698 00	13 50	4,995 00	14 00	5,180 00
5	Portland cement	Barrel	560	1 64	918 40	1 35	756 00	1 40	784 00
6	Hydrated lime	Bag	200	1 01	202 00	60	120 00	65	130 00
7	Reinforcing steel	Pound	80,000	034	2,720 00	04	3,200 00	057	4,560 00
8	Removing and disposing of existing bridge	Lump sum			3,400 00		4,000 00		7,000 00
	Total				$73,993 40		$82,776 00		$91,700 00

TABLE NO. 18—CONTRACT B23—REMOVAL OF TREAT'S ISLAND AND SMITH'S HIGHWAY BRIDGES.

Canvass of Bids Received September 20, 1932.

Item No.	Item.	Unit.	Quantities.	Joliet Bridge and Construction Co., Joliet, Ill.		Powers-Thompson Construction Co., Joliet, Ill.		Capt. Frank Deneen, Lacon, Ill.		L. P. Friestadt & Co., 7 S. Dearborn St., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Removing and disposing of superstructure of west span, Treat's Island Bridge	Lump sum			$1,285 00		$1,000 00		$ 800 00		$1,450 00
2	Barricades and warning signs at Treat's Island Bridge	Lump sum			100 00		100 00		10 00		100 00
3	Removing and disposing of the sub- and superstructure, Smith's Highway Bridge	Lump sum			1,985 00		2,600 00		3,500 00		2,800 00
4	Barricades and warning signs at Smith's Highway Bridge	Lump sum			100 00		100 00		10 00		100 00
	Total				$3,470 00		$3,800 00		$4,320 00		$4,450 00

TABLE NO. 18—Concluded.

Item No.	Item.	Unit.	Quantities.	Lind and Reed, 607 N. Chicago St., Joliet, Ill.		Congress Construction Co., 506 S. Wabash Ave., Chicago, Ill.		Strobel Construction Co., 53 W. Jackson Blvd., Chicago, Ill.	
				Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Removing and disposing of superstructure of west span, Treat's Island Bridge	Lump sum			$ 950 00		$1,450 00		$1,780 00
2	Barricades and warning signs at Treat's Island Bridge	Lump sum			150 00		50 00		100 00
3	Removing and disposing of the sub- and superstructure, Smith's Highway Bridge	Lump sum			3,600 00		3,950 00		3,790 00
4	Barricades and warning signs at Smith's Highway Bridge	Lump sum			150 00		50 00		100 00
	Total				$4,850 00		$5,500 00		$5,770 00

ILLINOIS WATERWAY BRIDGES.

Illustrations.

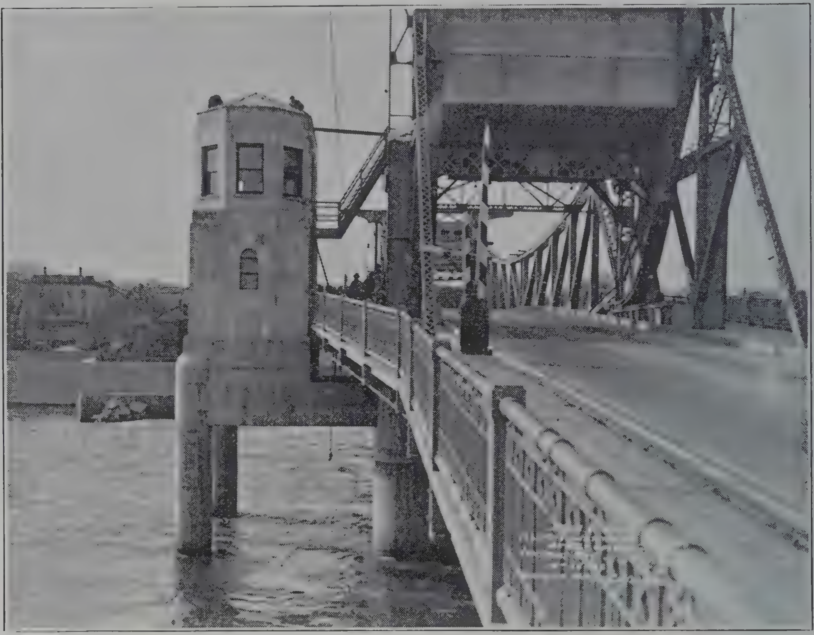


Figure 1—Jackson Street Bridge, Joliet, looking west.

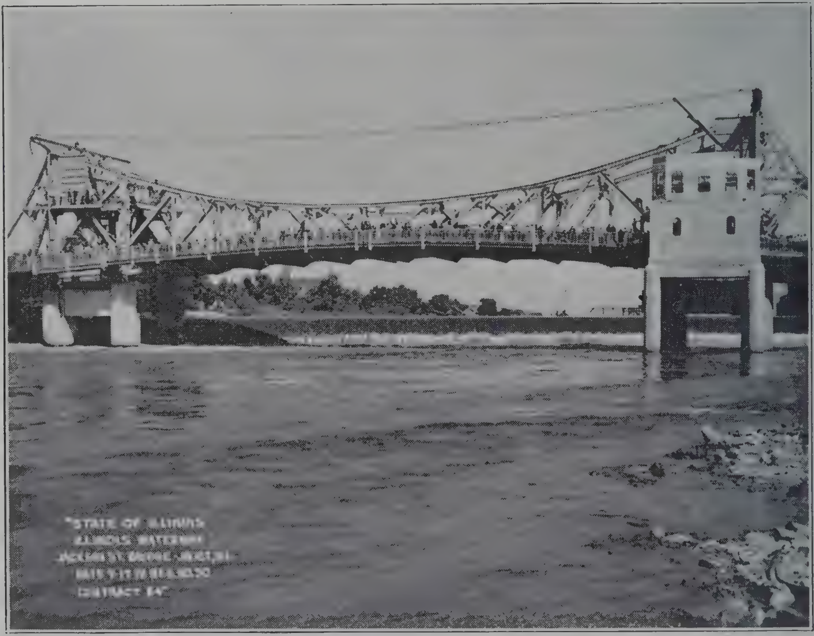


Figure 2.—Jackson Street Bridge, Joliet, looking north.

This picture was taken on September 17, 1932, immediately after the dedication ceremonies. In the background is the Jackson Street Dam, which will be removed after the water has been raised to pool level which will be the same as the present level above the dam.

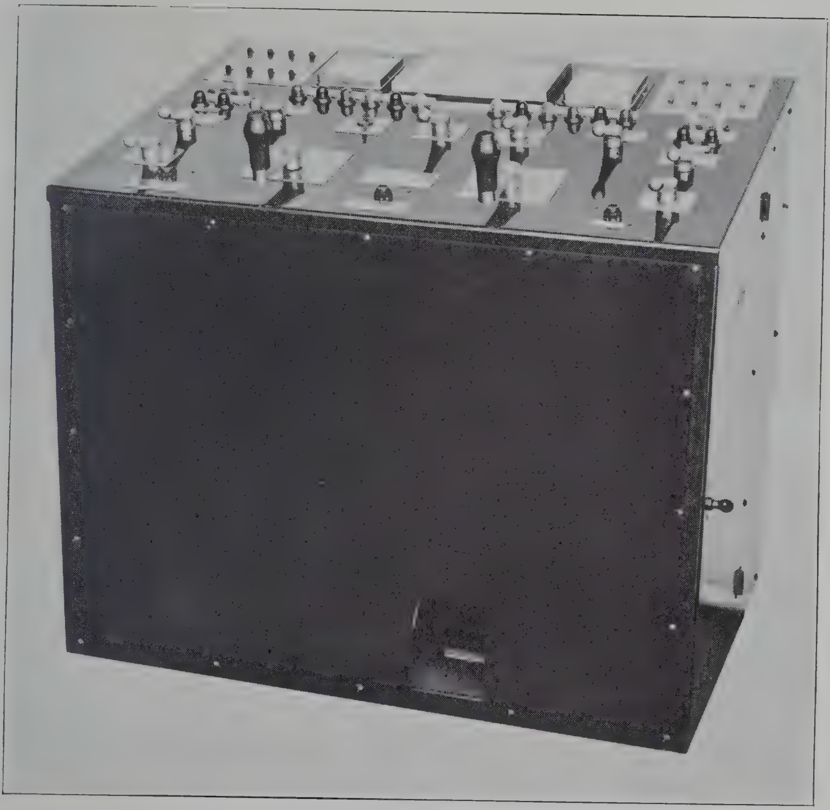


Figure 3—Bench Board, or Control Stand, Jackson Street Bridge, Joliet.
(Courtesy Cutler-Hammer, Inc.)

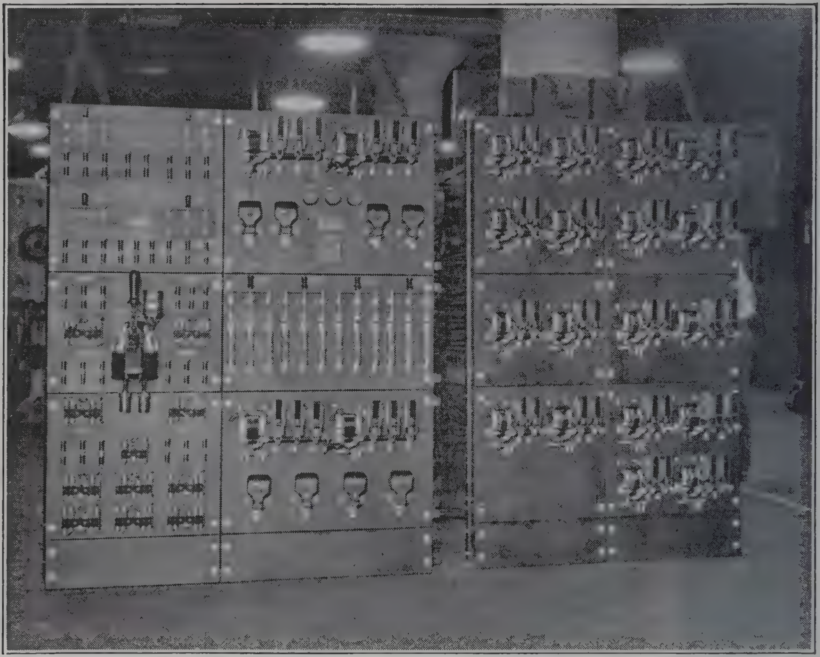


Figure 4—Control Panel, Jackson Street Bridge, Joliet.
(Courtesy Cutler-Hammer, Inc.)

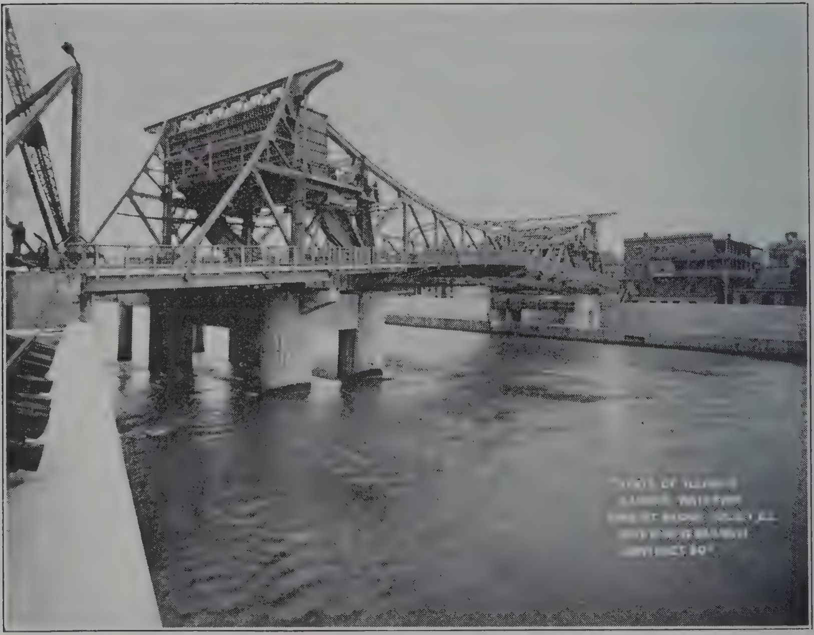


Figure 5—Cass Street Bridge, Joliet, looking southwest.

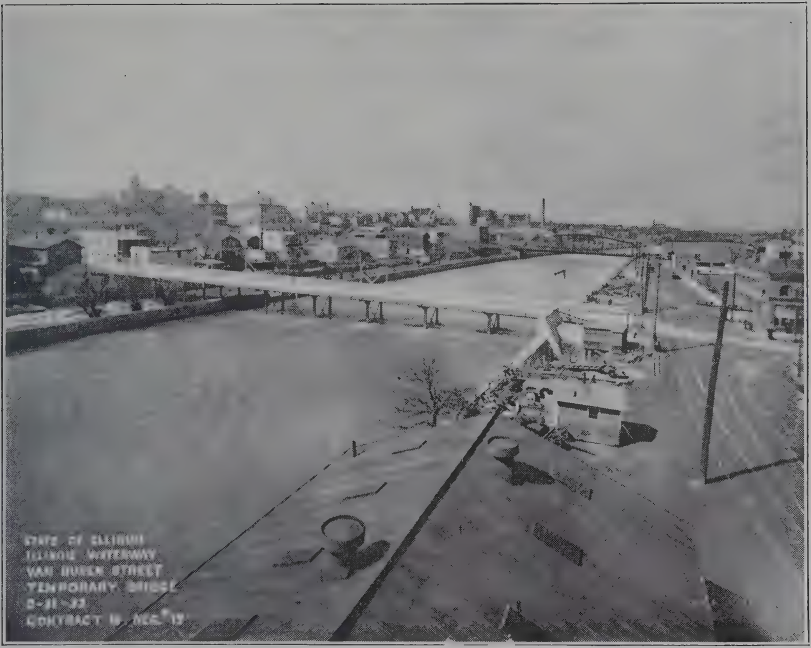


Figure 6—VanBuren Street Temporary Bridge, Joliet. The old Cass Street Bridge is in the background.

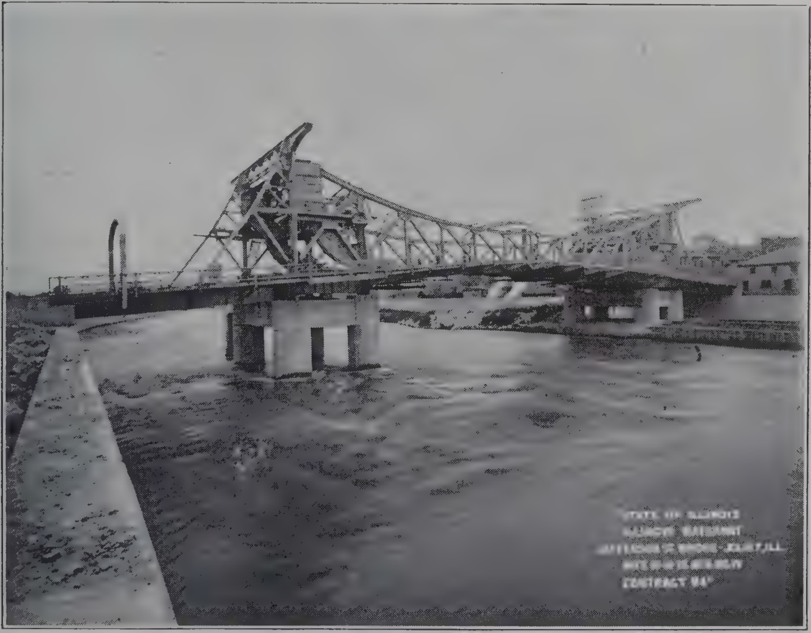


Figure 7—Jefferson Street Bridge, Joliet, looking southwest.

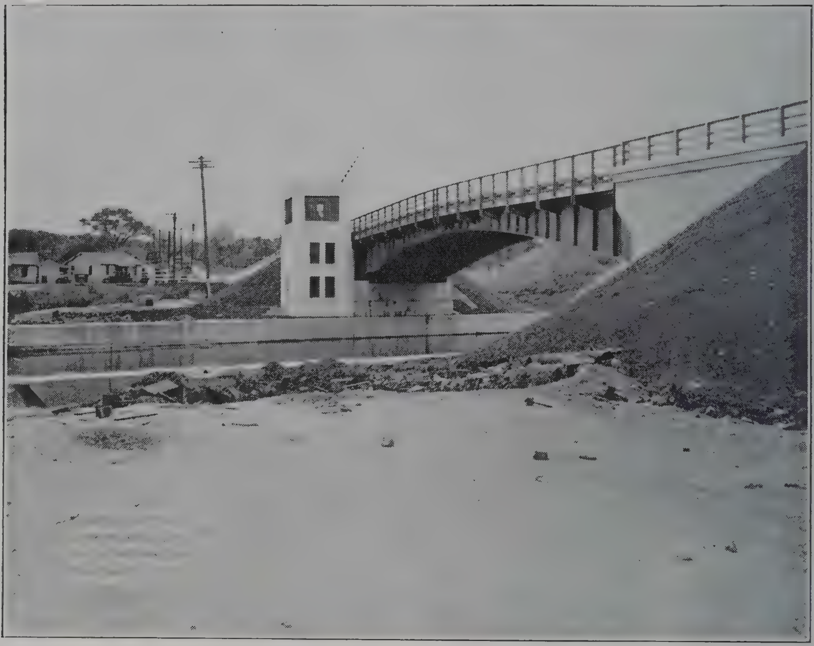


Figure 8—Brandon Road Bridge, closed. Looking northeast.

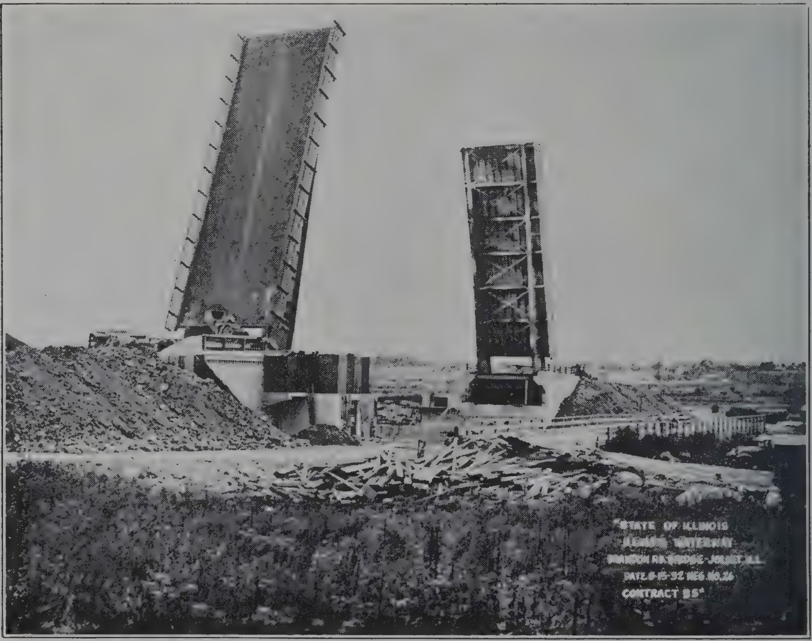


Figure 9—Brandon Road Bridge, open. Looking southeast.

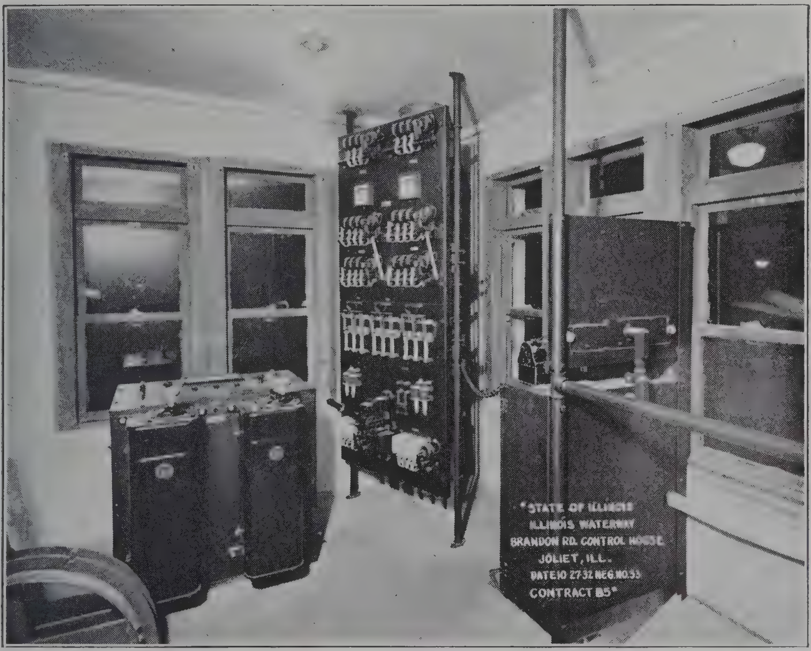


Figure 10—Brandon Road Bridge; Interior of Operator's House, showing control bench and switchboard.

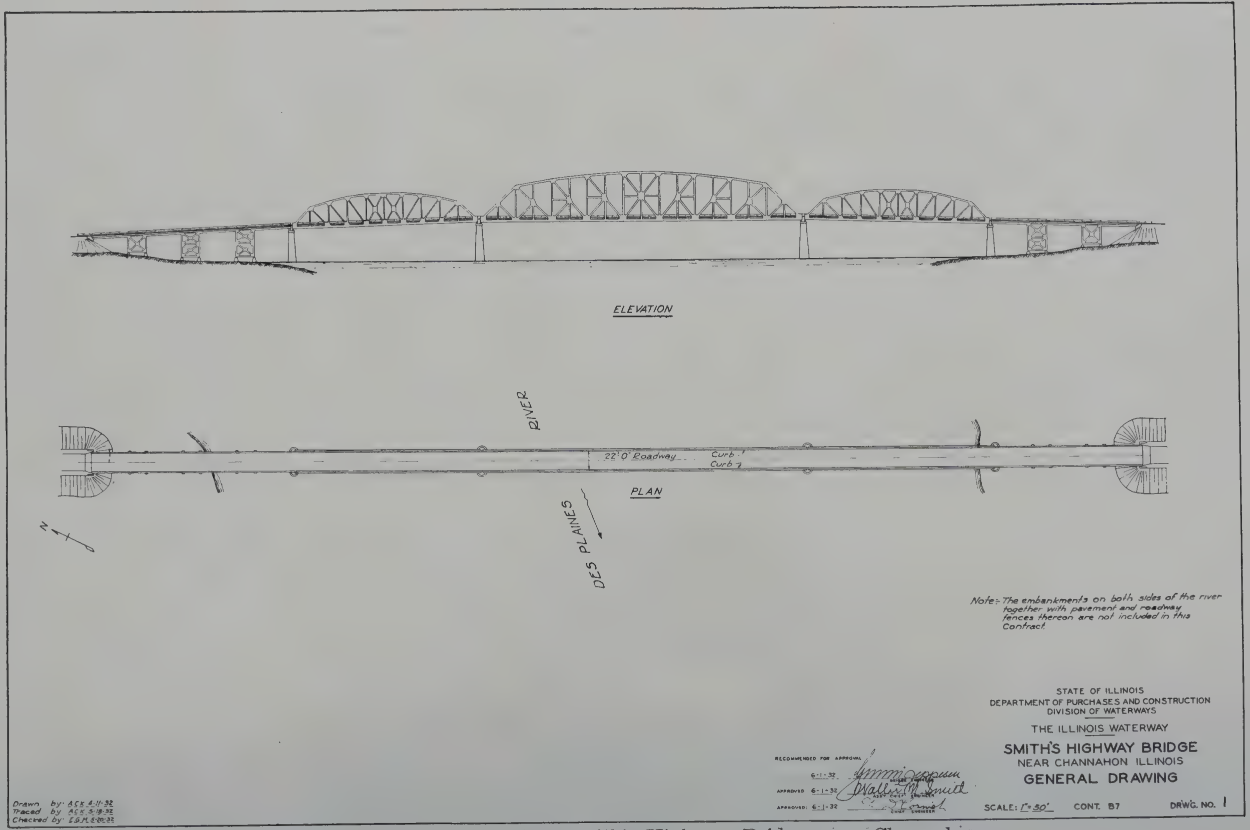


Figure 11—General Drawing, Smith's Highway Bridge, near Channahon.

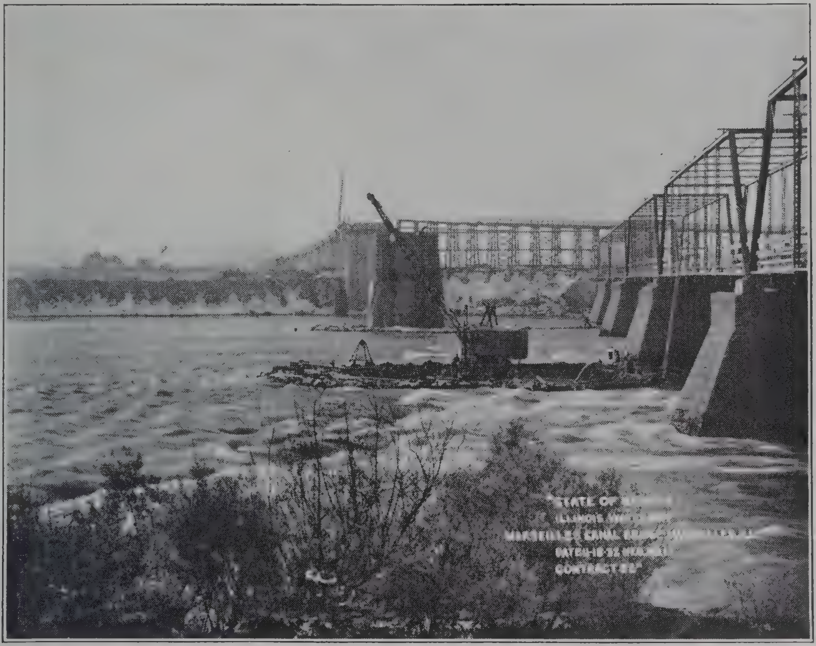


Figure 12—Marseilles Bridge. The old river bridge is on the right. The south approach to, and the piers for, the canal bridge are in the background, and the piers for the new river bridge in the middle distance. The timber trestle which will connect the bridge with the service road to the Marseilles Lock is seen between the new and the old bridge.

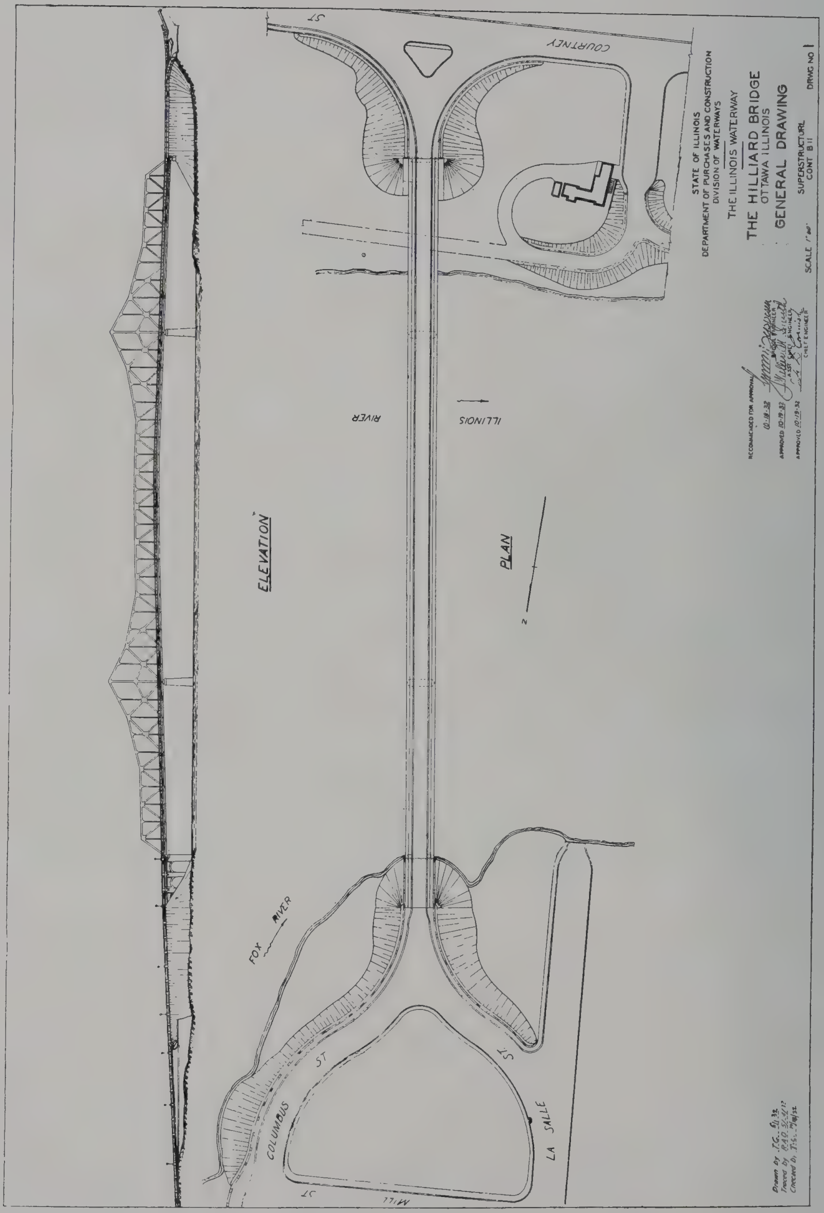


Figure 13—General Drawing, Hilliard Bridge, Ottawa.

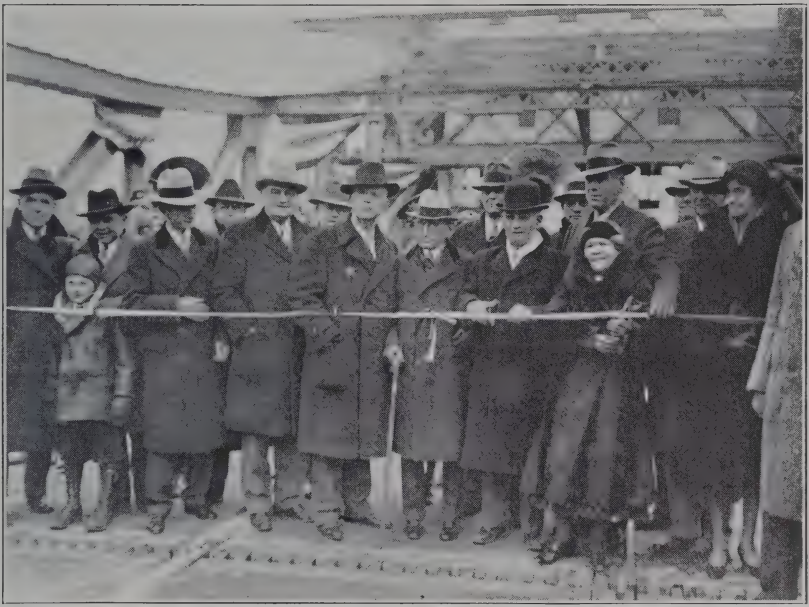


Figure 14—Group of State and city officials at the opening of the Jefferson Street Bridge, Joliet, November 26, 1932.

From left to right—R. D. Wood, V. P. Mississippi Valley S. S. Co., and Son; J. H. Walker, Division Engineer, Div. of Waterways; J. V. Bartley, President, Association of Commerce; P. W. Armstrong, Works Manager, Mississippi Valley S. S. Co.; Edward R. Daley, Chairman of Waterway Committee, A. C.; Geo. A. Barr, Member of Waterway Committee, A. C.; L. D. Cornish, Chief Engineer, Div. of Waterways; Henry H. Kohn, Director of Purchases and Construction; Benj. H. Miller, Supervisor, Illinois Waterway Construction; Wm. A. Hennessy, Mayor (Cutting ribbon); Gunni Jeppesen, Bridge Engineer, Div. of Waterways; Mrs. L. D. Cornish; David J. Emery, Commissioner of Accounts and Finances; Sam Shepley, Commissioner of Streets and Public Improvements; Geo. F. Powers, Pres. Powers-Thompson Construction Co.; Mrs. E. A. Schmidt.—*Photo by International News Photos, Inc.*

BRIDGES.

By GUNNI JEPPESEN, *Bridge Engineer.*

GENERAL OUTLINE.

Since the fourteenth annual report was prepared, the Illinois Waterway bridge program, which is outlined on page 21 of said report, has been extended by the addition of a bridge over the Illinois River in line with the Marseilles Canal Bridge, which latter was included in the original program.

During the past year and a half the work in the office, as well as in the field, has progressed at a high rate of speed in spite of many delays due to injunction proceedings and other legal obstacles as mentioned elsewhere in this volume.

The present status of the work (December 1, 1932), is as follows:

Name of bridge.	Drawings completed, per cent.	Construction completed, per cent.
Ruby Street Bridge, Joliet	25	0
Jackson Street Bridge, Joliet	100	95
Cass Street Bridge, Joliet	100	85
Van Buren Street Temporary Bridge, Joliet	100	100
Jefferson Street Bridge, Joliet	95	90
McDonough Street Bridge, Joliet	80	5
Brandon Road Bridge	100	100
Smith's Highway Bridge	100	40
Marseilles Canal Bridge	100	80
Illinois River Bridge at Marseilles	95	20
Hilliard Bridge, Ottawa	60	2
Miscellaneous work	0	0

The item "Miscellaneous Work" includes navigation lights for the Smith's Highway and Marseilles Canal bridges, street lights for the approaches to the Jackson, Cass and Jefferson Street bridges in Joliet, and other minor operations.

The plans for the superstructures of the Joliet bridges are being prepared by the Scherzer Rolling Lift Bridge Co., Chicago. The plans for the Brandon Road Bridge were prepared by Harrington and Cortelyou, Kansas City, Missouri. All other plans and all specifications and contract documents are being prepared in the Chicago office of the Division of Waterways, under the writer's direction.

RUBY STREET BRIDGE.

The preliminary work on plans and specifications for the Ruby Street Bridge is being held in abeyance by order of the U. S. engineer office which is contemplating a relocation of the navigation channel at this point.

JACKSON STREET BRIDGE.

The Jackson Street Bridge is a double leaf, rolling lift bridge of the Scherzer type and is typical of the five bridges being constructed in the city of Joliet. The general features of the design are described in the previous report. The width of the roadway is 24 feet and there are two 6-foot sidewalks.

Local conditions made overhead counterweights necessary which detract from the appearance of the structure but on the whole the appearance is satisfactory and the general effect will be more pleasing still, when the water in the river is raised to pool level as this will have the effect of shortening the rather tall piers.

Great care was taken to get good looking details throughout. This is reflected in the structural work and, more particularly, in the ornamental hand railings and the operator's house, which is in the modern manner. It was designed and detailed in cooperation with Mr. Thos. E. Tallmadge, chairman of the Board of Art Advisers of the Department of Purchases and Construction.

The building is faced with Indiana limestone and is built throughout to very exacting specifications. It is provided with modern plumbing and is heated by electricity.

It is in two stories. The upper floor contains the operator's room in which is found the bench board or control stand (see illustration) and from which the operator has an excellent view up and down the river.

The lower floor contains, in addition to entrance hall, broom closet and toilet, the control room in which is found the control panel, the main switch, and other auxiliary apparatus.

The electrical equipment on which depends the uninterrupted and safe operation of the bridge is unusually substantial and rugged and embodies all the latest improvements in bridge control mechanism. It is complicated as the illustration of the control panel will show but, at the same time, it is extremely simple from the standpoint of operation and it is completely interlocked so as to be virtually fool-proof.

At night the bridge is brilliantly lighted by means of four flood lights located on top of the towers. These are so arranged that they will not interfere with the vision of a motorist crossing the bridge nor with that of the navigator of an approaching vessel.

The Jackson Street Bridge was opened to land traffic on September 17, 1932, and has been operated successfully by hand.

CASS STREET BRIDGE.

The Cass Street Bridge conforms in every respect to the general design of the Jackson Street Bridge described above, except that it carries a single street car track and has a wider roadway and wider sidewalks as required to handle the heavy downtown traffic passing over this bridge. The roadway is 44 feet wide and the width of each sidewalk is 7 feet and 5 inches.

The bridge is rapidly nearing completion as will be seen from the illustration.

VAN BUREN STREET TEMPORARY BRIDGE.

The temporary bridge at VanBuren Street in Joliet was planned as a wooden structure on concrete piers, but bids on alternative plans were admitted and the bridge was built as a steel structure, with a wooden floor, supported on steel columns resting on shallow concrete pedestals on the bottom of the river.

The bridge has a 20 foot 6 inch roadway with two street car tracks, and one 6-foot sidewalk.

The bridge was completed on February 29, 1932, and has satisfactorily served its purpose which was to relieve traffic congestion in the city of Joliet during the reconstruction of the permanent bridges. The construction contract provides for the removal of the structure as and when required by the State.

JEFFERSON STREET BRIDGE.

The Jefferson Street Bridge follows the same general lines as the Jackson Street and Cass Street bridges. This bridge handles the main east-west city traffic. It carries two street car tracks and has a roadway 40 feet wide and two 9 foot 5 inch sidewalks.

The Jefferson Street Bridge was opened to street traffic on November 26th and has been successfully operated by hand.

MCDONOUGH STREET BRIDGE.

The McDonough Street Bridge on which work was commenced only a short time ago will be a double leaf Scherzer Rolling Lift Bridge with plate girder approach spans. In general appearance, it will resemble the Jackson, Cass and Jefferson Street bridges. The width of the roadway is 22 feet 6 inches and there are two 6 foot sidewalks. The bridge will carry a double track for 50 ton interurban cars and will also accommodate a single train composed of one 42 ton locomotive followed by two 75 ton freight cars, moving at slow speed.

A number of improvements which were found desirable as the work on the first three Joliet bridges progressed have been embodied in the design of the McDonough Street Bridge, the most important of which is the adoption of factory made speed reducers as a part of the operating machinery. While in the Jackson, Cass and Jefferson Street bridges, the operator's house is connected with the operating motors on the other side of the channel by means of temporary, overhead cables, this connection, in the case of the McDonough Street Bridge will be made by means of submarine cables laid in a trench in the river bottom.

BRANDON ROAD BRIDGE.

The Brandon Road Bridge is a double leaf, trunnion bascule bridge with the counterweights placed below the roadway of the bridge and descending into water-tight concrete pits as the bridge is raised.

The architectural treatment of the bridge was worked out in cooperation with the Board of Art Advisers. It is simple, almost severe, but harmonizes well with the massive concrete structure of the Brandon Road Lock, which adjoins the bridge on the east. The width of the roadway is 22 feet and there are no sidewalks.

The Brandon Road Bridge was opened to traffic in October and has been entirely completed. The bridge operates smoothly and noiselessly and will open and close respectively in 45 seconds under normal conditions.

SMITH'S HIGHWAY BRIDGE.

The Smith's Highway Bridge is a high level fixed bridge, the center span affording a horizontal clearance for navigation of 350 feet and a vertical clearance of 47 feet.

The bridge is of massive proportions, but by balancing the dimensions of the main span with those of the two side spans and the steel viaduct approaches, a harmonious and graceful outline has been obtained.

The width of the roadway is 22 feet and there are no sidewalks. The floor is of concrete and the viaduct portions of the bridge are provided with Hunter safety railings of heavy construction.

The piers, which are of the dumb-bell type, and the abutments, have been completed and steel erection has just been commenced.

MARSEILLES BRIDGE.

Plate 4 opposite page 26 of the fourteenth annual report shows the general lay-out of the Marseilles Canal Bridge as it was then planned. This lay-out contemplated the use of the existing river bridge with a spiral connection between the south end of the river bridge and the north end of the canal bridge consisting partly of embankment and partly of a timber trestle. This spiral connection was to be temporary, and was to serve the general traffic only until the old river bridge, which is in very poor shape, could be replaced by a modern structure. Objections, however, were raised to the grades and curvature of the temporary spiral connection as being dangerous and an agreement was therefore entered into with the local authorities whereby it was made possible to build a new river bridge on line with the canal bridge and ending on the north side of the river at the foot of the main business street of the city of Marseilles.

With this modification, the completed structure from north to south will consist of:

3—235 ft. truss spans (over the river).
1—110 ft. steel viaduct.
1—235 ft. truss span (over the canal).
1—317 ft. steel and concrete viaduct.
242 linear feet of embankment.

The wooden trestle which had been nearly completed before the change in the general lay-out of the bridge was decided upon will be used as a connection between the high level bridge and a service road leading west to the Marseilles Lock at the west end of the Marseilles Canal.

The details of floor and railings are similar to those of the Smith's Highway Bridge.

HILLIARD BRIDGE, OTTAWA.

The original plans of the Hilliard Bridge at Ottawa, which connects the main portion of the city of Ottawa with South Ottawa, provided for one 365 foot simple truss span and a series of 212 foot truss spans and was similar to the design for the Smith's Highway Bridge.

At the first letting, on August 30, 1932, the Independent Bridge Company of Pittsburgh, however, submitted an alternative design for a cantilever bridge with a main span of 500 feet and although this design was somewhat more expensive than the original design, it was found to offer so many advantages, from the standpoint of appearance and navigation clearances, etc., that the State adopted this design as its own. The work was readvertised and was awarded on the basis of a modification of this design.

This structure will be unique in this part of the country. The total length of the steel structure will be 1,000 feet, and the bridge will be entirely symmetrical, except for a short, arched, concrete structure at the north end of the bridge which connects with two curved roadways connecting the bridge with LaSalle Street and Columbus Street, respectively, and which surround a plaza on which the city expects some day to build a new city hall.

The width of the roadway is 24 feet and there are two 5-foot sidewalks, covered with removable, pre-cast, Haydite concrete slabs, under which are located a 12-inch water main, a 10-inch gas main, and numerous electric cables for telephone, power and light.

The plaza at the north, or city, end of the bridge, will be surrounded by ornamental concrete railings into which will be set ornamental concrete lamp posts, the lights of which will be turned on and off by means of a photo-electric control switch, so adjusted as to keep the lights on, whenever required, regardless of the time of day.

FIELD OPERATIONS.

By J. H. Walker, *Division Engineer.*

In accord with a schedule worked out between the State and Federal authorities actual construction in the field was fast drawing the Illinois Waterway to a realization. Advertisements were published by the State for bids for bridge construction to be opened July 7, 1931. However, the Fifty-seventh General Assembly had passed a bill (H. B. No. 307) setting forth certain conditions of advertisement and award of contracts for State work contingent upon payment by the contractor of what was commonly termed as "local average wage scale." This bill becoming a law at the start of the biennium (July 1st), invalidated the bids received although the advertisements had been posted prior to the passage of the bill.

The field office was then directed to immediately proceed with a thorough survey of wages paid in all industries, construction projects, etc., in the vicinity of the work to be undertaken by the State. After this data had been obtained the contracts for bridge work were again advertised for bids. In accord with conditions of the legislative act, the labor organizations of Joliet filed protest against the advertised scale of pay. Hearings were then held before an arbitration board in Springfield, the decision of which was favorable to the State.

In the meantime, however, the constitutionality of the bill was questioned and brought into court for legal decision. The local court decided that the act was unconstitutional and it was referred to the State Supreme Court for final action. This decision further held up the award of contracts for the bridge work. The Supreme Court in view of the importance of matters being held up pending their decision set aside other less urgent matters and proceeded to reach a conclusion. Their decision substantiated that of the lower courts and they declared that H. B. No. 307 was unconstitutional. This again necessitated the readvertising of the bridge contracts and final bids were received at Springfield, November 24, 1931, for the construction of the Van Buren Street Temporary Bridge (contract B-1), the Marseilles Canal Bridge Substructure and Approaches (contract B-2) and the Brandon Road Bridge (contract B-5).

Because of the many delays there had been practically no field engineering organization maintained, but many applicants had been interviewed and inasmuch as applicants were plentiful a very good selection was possible and a satisfactory organization was quickly created.

Construction Progress.

VAN BUREN STREET TEMPORARY BRIDGE.

From the very first talk of constructing a temporary bridge at Van Buren Street rumblings were heard from residents and business people by way of rumor and otherwise claiming excessive property and business damage.

When the contract was awarded to Green & Sons Company and actual construction started these rumors became more direct in meaning and finally came to a head when proceedings were started in court to enjoin the C. & J. Street Car Company from laying their rails in Bluff Street to connect between Jefferson Street and the temporary bridge. The hearings on the injunction were heard in the local court and in a reserved decision the injunction was denied.

Construction of the bridge was commenced on December 8, 1931 and carried on by the contractor with every endeavor to cooperate and eliminate causing property or business damage to the residences and business people adjacent to the work.

The original design of the temporary bridge was for a wooden structure on concrete piers, however, an alternate plan submitted by the low bidder, Green & Sons Company, was acceptable to the State and was adopted.

This alternate design was for a steel structure with wooden floors supported on steel columns.

The footings of these were built by placing cofferdams of steel sheet piling around their locations. These cofferdams were then pumped out, the overburden of gravel, silt, etc., was removed from the surface of the rock and a small amount of rock removed to make a level bearing. Holes were then drilled down into the rock and swedge bolts were driven into the holes, the bearing plates placed on top thereof. The entire base was then grouted with quick setting cement.

The steel columns were then placed on top of these billet plates and long bolts, the tops of which were above water level were screwed onto the bolts of the bearing plates by means of sleeve nuts and the column was then bolted to lugs at the top of the bolt above the water line to facilitate removal.

The bridge was completed well within the scheduled time, but was not thrown open to traffic until February 29, 1932. It has a 20-foot roadway with two street car tracks and one 6-foot sidewalk.

MARSEILLES BRIDGE.

Work on the substructure for the Marseilles Canal Bridge was commenced by the Congress Construction Company immediately after they were notified that the contract would be awarded to them.

This bridge was originally designed to be a fixed span over the canal, which at Marseilles detours water traffic around the power dam of the Illinois Light & Power Co. to re-enter the river at the Marseilles Lock at Bell's Island about two miles below. In order to give proper clearance, as required by the War Department, the Canal Bridge had to be built approximately 50 feet above the pool level which was also above the old highway bridge over the Illinois River. In order to connect the new canal bridge with the old river bridge a spiral approach was required. Since it was anticipated that this river bridge would soon be replaced by a new one connecting to the new canal bridge the spiral approach between the two was designed as a temporary timber structure.

The city of Marseilles taking the attitude that the Division of Waterways should construct the new river bridge, filed for and obtained court orders enjoining further work on the canal bridge until it could be definitely settled by arbitration whether the State through its Division of Waterways, or Division of Highways, or the city of Marseilles, or county of LaSalle, would be responsible for the construction of the new river bridge. After much discussion it was decided to make a joint proposition of the matter, the State Division of Waterways paying about two-thirds and the city of Marseilles and county of LaSalle equally sharing the balance.

Immediate advertisements for bids for the new river bridge and the canal bridge superstructures were posted. After due course the work was awarded to the Mississippi Valley Structural Steel Company as contract B-3 and B-20. The new substructure work made necessary by the river bridge and which consisted of the addition of three new piers and the north abutment was added to the substructure contract of the Congress Construction Company which originally covered only the substructure and approaches for the canal bridge.

As soon as the city of Marseilles had the courts dissolve the injunction the Congress Construction Company again proceeded with the substructure.

The approach from the south consists of reinforced bents and reinforced concrete slab and railing supported on steel beams.

Work progressed rapidly but it was found that in many cases, due to the poor quality of the material, it was necessary to carry the foundation to greater depths than had been planned on. The rock in this vicinity is of a blue shale that disintegrates when exposed to air and water.

The substructure of the canal bridge, as well as the south approach and the temporary wooden approach, which will remain as an approach from the lock are practically completed.

The superstructure is well under way and the tower or viaduct span connecting the canal bridge and the river bridge as well as the temporary approach is about completed. The canal span is being erected on falsework which will be removed as soon as the bridge is riveted. Navigation is being maintained in the canal through the center portion of the falsework which was designed for this purpose.

Substructure work on the river bridge also has progressed rapidly and it will be completed in the very near future.

BRANDON ROAD BRIDGE.

Brandon Road Bridge was awarded under contract B-5 to the Independent Bridge Company of Pittsburgh, Pa.

The Independent Bridge Company started actual construction immediately after the award of the contract. Some difficulty was encountered in constructing the counterweight pits where ground water was found exceedingly hard to cofferdam off. The elevation of rock for suitable foundation purposes was found to be within a foot of where shown on the plans. However, in order to obtain suitable foundation it was found necessary to go slightly below the elevation shown thereon.

Inasmuch as the U. S. Engineer Department contractor had completed the walls for the approach to the lock, it was not necessary to construct a cofferdam, however, ground water, possibly leaking from the I. & M. Canal, proved to be a sufficient menace to necessitate construction of a steel sheet piling cofferdam on the north side.

After foundation work had been completed, progress was extremely rapid in the superstructure and it was found that the bridge could be opened to traffic much earlier than had been anticipated. The superstructure was completed and the bridge opened to traffic September 1, 1932.

The approaches to the bridge originally had been, under the contract, planned for gravel surfacing, however, at the request of the County Highway Department surfacing was made with water bound macadam.

The bridge is now being operated successfully under its own power and under traffic conditions.

JACKSON STREET BRIDGE, JOLIET.

In Joliet there are five main bridges, viz.: at Ruby, Jackson, Cass, Jefferson and McDonough streets.

The substructure for the Jackson, Cass and Jefferson Street bridges was awarded under contract B-6 to the Powers-Thompson Construction Company after bids had been received in Springfield for the work.

The contractor on March 1, 1932, proceeded to remove such portions of the old structure as was necessary to commence the new work.

On March 9, 1932, the cofferdam on the west side of Jackson Street was commenced. At this point there is a dam across the river, utilized by the Public Service Co. for power purposes, the powerhouse and generators being located on the east side of the river and parallel thereto.

The west piers for the new Jackson Street Bridge were so located that their position would place them at the junction of the power dam and the lock wall of the Illinois and Michigan Canal. In order to found these piers it was necessary to erect flash boards on top of the dam, thus raising the head water level and eliminating the flow of water over the dam within the cofferdamed area. Considerable difficulty in drying up this cofferdam was encountered.

After the cofferdam had been pumped dry and sealed off by mucking litter and mud it was found that the location of the feed tunnel to the Illinois and Michigan Canal was improperly given by the Sanitary District maps. This made it necessary to cofferdam the tunnel and seal the gates on the head water level, since the construction of the two most westerly piers required excavating through the tunnel proper.

Inasmuch as this construction destroyed the method of feeding the I. & M. Canal, it was then necessary to maintain feed by other means, and the contractor then had to construct a flume and also assist the flume feed by using the valves in the gates to maintain navigation level in the canal.

With the water thus under control, it took very little time to remove the overburden and continue with the pier construction. After rock had been uncovered it was found, however, that there was one clay seam in each of two piers. In one, particularly, it was found necessary to penetrate into the rock 26 feet before the width of the seam had been reduced to such a point that it could be successfully bridged without structurally affecting the foundation.

The piers on the east side were placed with considerably more difficulty inasmuch as the water was at a much greater depth. The overburden on the rock was also much less and this afforded less foothold for the steel sheet piling forming the cofferdam. After this cofferdam had been pumped dry little difficulty was encountered in finding a good foundation. However, the sheet piling in one corner "blew" on one occasion, and water flooded the cofferdam before a pile hammer could be placed in operation to seal the hole. After the hole had been sealed work progressed in good order and concrete was soon being poured.

The U. S. Engineer Department cooperated in every respect to assist the progress of the work since they also desired that the bridges should be completed at the earliest possible date. At the east approach to the Jackson Street Bridge which also was included in the substructure contract (B-6) the U. S. Engineer Department contractor had to complete an intercepting sewer across the approach, and this somewhat delayed completion of the work.

The superstructure was commenced on the west side on May 5, 1932, by the Mississippi Valley Structural Steel Company under their contract B-4 which also includes superstructure for the Jefferson Street Bridge.

Due to labor difficulties the Mississippi Valley Structural Steel Company sublet the erection of the bridge to Oscar Daniels Company of Chicago.

The start on the superstructure had a bad set back when the truck bearing the steel derrick rolled, out of control, down the hill on the west side and crashed into the abutment, dropping into the space between the I. & M. Canal and the old abutment. However, this did not handicap the work when new parts and new derricks were rushed to the job and work was commenced practically on schedule. The progress of the superstructure was unhampered from there on and except for minor details which are always encountered in field erection the bridge was practically ready for opening on schedule time.

Traffic was admitted to the bridge and it was left in service after September 17th, just two days after the date scheduled for its opening.

CASS STREET BRIDGE.

Substructure work on Cass Street Bridge was commenced March 28, 1932 and proceeded rapidly from there on. Little or no difficulty was encountered on the east side, but on the west side a clay seam necessitated carrying one pier to a depth of 18 feet below the grade shown on the plans.

One point which required this greater depth was the fact that in a lift bridge of this type the anchor piers are required to act not only as bearing for the structure but also to counteract uplift. In view of this fact, the piers could not be stopped above the elevation shown on the plans and had to be carried to a depth in rock to give the proper foundation.

The entire Cass Street substructure was completed somewhat ahead of time except for the west abutment. This could have been completed well ahead of time but such action would have delayed completion of the retaining walls under construction by the U. S. Engineer Department. Even with this handicap, the entire substructure was completed ahead of the schedule set for it.

The superstructure for the Cass Street Bridge was awarded under contract B-9 to the Independent Bridge Company of Pittsburgh, Pennsylvania.

When this company attempted to commence operations on the steel work, the organized labor of Joliet under force prohibited them from commencing. After due consultation with everyone concerned, the Independent Bridge Company sublet the erection to the L. P. Friestedt Company, Chicago. Immediately this company, who had to overcome a delay of approximately three weeks, set up two steel erection derricks, one on each side, and proceeded at a rapid pace to complete the superstructure. Little or no difficulty was encountered in the early completion of this job, except for minor details which, of course, must be worked out in the field on practically every job.

The Cass Street Bridge will, probably, be opened to land traffic about December 17, 1932, weather permitting.

JEFFERSON STREET.

The substructure for the Jefferson Street Bridge proceeded rapidly under the contract to the Powers-Thompson Construction Company except for the abutment at the west end. That abutment was to have been built by the contractor of the U. S. Engineering Department inasmuch as it formed a portion of the retaining wall section. Had this abutment been built by that contractor then the bridge would not have been completed at the date contemplated. In view of this, and in view of the fact that the U. S. Engineering Department contractor was considerably behind his program at that time, it was decided that the State contractor should construct that portion of the work. Little or no difficulty had been found except in the two cases particularly noted on Cass and Jackson Streets with clay pockets or seams in the good rock foundation uncovered in the river. At Jefferson Street it was found necessary to vary slightly from the plans, elevation, and dimensions but no extreme deviation was necessary.

The superstructure of the Jefferson Street Bridge was awarded to the Mississippi Valley Structural Steel Company under contract B-4 which included Jackson Street superstructure, and the erection was sublet to the same sub-contractor, the Oscar Daniels Company. Owing to this fact the substructure was completed long before the superstructure was started.

The actual setting of steel was commenced on July 15, 1932, and the west leaf was completed September 8, 1932. The east leaf was completed about November 12, 1932.

OPERATOR HOUSES.

The Operators' Houses for all 5 of these bridges were removed from the superstructure contracts and after having been re-designed by the Board of Art Advisers were awarded under one contract B-19 to Schmidt Brothers Construction Company.

The houses for Jackson, Cass and Jefferson Street bridges are practically completed except for detail finishing.

APPROACHES, CASS AND JEFFERSON STREET BRIDGES.

The approaches for the Cass and Jefferson Street bridges also were awarded under separate contracts B-14 and B-13 to the Powers-Thompson Construction Company being lowest bidders.

This work proved to be the most bothersome in the many details that had to be worked out in the field. Because it was not possible to ascertain beforehand what might be encountered when the old streets were torn up there were quite a lot of utility and watermain and sewer changes that could not be determined until they were opened up by excavation.

Due to negotiations between the State and adjoining property owners for damage claims the street pavement was planned to be built to the approved approach grade but some of the sidewalks were temporarily left in at the old level with temporary wood steps up to the bridge level, until settlements had been made.

Until the time of starting the approaches to those two bridges no great amount of opposition was heard but at this time much controversy arose between the city and the State on various matters of detail, mostly however on the question of the steps referred to above. Another matter which caused no little delay in the completion of the approach paving was the location of street lamps, conduits, etc., while still another, and greater, delay was caused by the demands of the city for re-location of protection of its water mains.

SMITH'S HIGHWAY BRIDGE.

The substructure for the Smith's Highway Bridge was awarded under contract B-7 to the Powers-Thompson Construction Company. Work was started June 24, and carried through to completion by September 15, 1932. Little or no difficulty was encountered in the substructure work. The foundation material is not of the quality found in the river bed at Joliet, but is more similar to that found at Marseilles and on the Dresden Island Lock and Dam, being a shaley rock which disintegrates when exposed to air and weather.

Due to re-location of the bridge, somewhat off the line of core borings taken by the State, some difference was found in rock elevation. The rock, as uncovered and after close examination by Mr. Walter M. Smith, assistant chief engineer, and the State Geologist was found not to be of sufficient bearing quality at the surface, therefore, it was concluded necessary to carry the pier footings at least 5 feet into the rock.

The superstructure for this bridge has been awarded to the Mississippi Valley Structural Steel Company as contract B-8.

The erection was sub-let to the H. P. Friestedt Company, the same erection crew that had erected the Cass Street Bridge.

The main span will be erected on false work constructed in the river for that purpose and to be removed as soon as the bridge is riveted.

Navigation will be maintained through a large opening left in the false work for this purpose.

The approaches for this bridge were built by the county of Will, highway department.

REMOVAL OF OLD TREAT'S ISLAND AND SMITH'S HIGHWAY BRIDGES.

The removal of the present old structure at Treat's Island and the old present Smith's Highway Bridge at Channahon was awarded under separate contract B-23 to the Joliet Bridge and Construction Company. The work of removing Treat's Island Bridge was started October 12th and completed October 15, 1932.

The removal of the Smith's Bridge structure will not be undertaken until the new bridge is completed for traffic.

HILLIARD BRIDGE, OTTAWA, ILLINOIS.

The bridge in Ottawa to be known as the Hilliard Bridge will be jointly built by the State Division of Waterways, State Division of Highways and the city of Ottawa.

Bids were received on the substructure and the contract was awarded to the low bidder, the MacDonald Engineering Company (contract B-10).

The MacDonald Engineering Company in turn sub-let part of their work to the Congress Construction Company. This then brought up the discussion of wage scale and employment inasmuch as the city of Ottawa in its agreement with the State to pay a portion of the cost of the bridge had specifically stated that Ottawa labor was to be employed on the work. After some discussion the work proceeded. After reaching a very good foundation material at the south abutment, the work was held up pending the outcome of a discussion between Mayor Hilliard of the city of Ottawa and the State Division of Waterways on the use of a pit run gravel, selected by the contractor. This issue is still under discussion.

The approaches to this bridge were filled in by the city of Ottawa by hired labor and paid for from the funds established by the city to share the cost of the new bridge.

MCDONOUGH STREET BRIDGE, JOLIET.

The Powers-Thompson Construction Company was awarded the contract for the substructure on its low bid under contract B-12.

The city of Joliet at this time obtained a court injunction prohibiting the State and the contractor from removing the old McDonough Street structure until the Jackson Street and Jefferson Street bridges had been thrown open to traffic. This injunction has been lifted and actual work on the removal of the old structure was started October 17, 1932. Some little difficulty occurred when the contractor attempted to set the frame for the east cofferdam, but with the aid and cooperation of the U. S. Engineering Department and the Sanitary District of Chicago, the speed of the current flowing through the river at this point was controlled so that the cofferdams were finally placed. The work is progressing rapidly and will be completed above pool elevation before the first of January, 1933.

The elevation of rock at McDonough Street was found to be somewhat different from that shown on the plans, but inasmuch as no subsoil exploration work had been carried on at the sites of the Joliet bridges, such a condition was expected to possibly exist. Slight changes in design made necessary by this fact had to be made.

The contract for the superstructure (B-15) was awarded to the Mississippi Valley Structural Steel Company.

The anchor columns and grillages which must be set in the substructure concrete have been received. Shop work on the balance of the structure is being carried on at top speed. Also included in the substructure contract for the McDonough Street Bridge was the work of constructing the section of wall omitted by the U. S. Engineer Department at the east end of VanBuren Street Bridge. However, this work cannot be performed until the city lifts the injunction which prohibits the State from removing the VanBuren Street Bridge until the Jefferson and Cass Street bridges are opened for traffic.

REPAIRS TO ILLINOIS AND MICHIGAN CANAL.

In 1931, a break occurred in the south bank of the Illinois and Michigan Canal approximately 2 miles west of Channahon Highway Bridge. The break was probably the result of either a muskrat hole or woodchuck hole upon which the water pressure worked until seepage finally resulted in a complete washout of the bank. The matter of repairing the break was immediately taken up and upon telegraphic authorization, after having received bids from 3 or 4 contractors, it was awarded to the Connolly Contracting Company, of St. Paul, who were, at the time, working on the Brandon Road Lock under a U. S. Engineer Department contract.

In order to reconstruct the bank and refill the canal to navigation level the most expeditious method was used. A wood crib built of 8 x 8 timbers was placed in the washed out bank, and in front of this Lackawanna steel sheet piling was driven to a depth of about 12 feet. It was then possible to raise the water level in the canal while the fill was being placed back of the sheet piling.

Within 3 days from the report of the washout navigation was again opened in that level of the canal.

About a year later, less than a quarter of a mile west, another break or washout occurred, apparently from the same cause.

Again it was decided to obtain 3 or 4 quotations from contractors capable of doing the work and awarding it as an emergency measure. In this case, the Powers-Thompson Construction Company was the lowest bidder and practically the same method of repair was used except wood sheet piling instead of steel was driven in this place.

In less than one week's time after the break was reported, navigation was again opened in the canal.

The worst break occurred in Ottawa about 1¼ miles west of Lock 12. At this section of the canal there is an old peat bottom and quite a lot of sand and fine material which does not serve to make a good bank fill. There had been a break at this point several years previous which had been repaired by the construction of a wood sheet pile dyke filled with sand.

Because of the character of the soil in which penetration had to be obtained in order to seal the bottom, it was decided that steel sheet piling would be used. Due to the speed at which the level emptied itself due to this washout the bed of the canal was washed to a depth of about 20 feet below the towpath and it was necessary to use steel sheet piling in 30 and 35 foot lengths to get a proper seal at the bottom. After the steel sheet piling had been driven with pile bents for support, the water was raised in the level while embankment was being replaced.

Inasmuch as the repair work on this washout was estimated to cost between eight and nine thousand dollars, a contract was drawn up in regular form and publicly advertised, bids for which were opened in Springfield. The work was awarded to the low bidder, the Powers-Thompson Construction Company and carried to quick completion.

Upon reports from Mayor Hilliard of Ottawa, the field office made a survey and investigation of the condition of the Fox River aqueduct which is leaking badly. Report of this is in the file of the Illinois and Michigan Canal office at Lockport, Illinois, as well as the Chicago office of the Division of Waterways.

Survey was also made of the condition of the canal embankments between Lock 12 west of Ottawa and Lock 10 at Marseilles. Low places were staked out and the Canal Dredge Fleet raised the height of the embankments by dredging from the canal bed and placing the fill thereon.

A survey was made at the Junction Lock at Brandon Road which will connect the Illinois and Michigan Canal with the Illinois Waterway, Brandon Road Pool, for the locating of lock operator's residence.

Inasmuch as the Jackson Street Lock will be abandoned when the Brandon Road Pool of the Illinois Waterway is flooded, it will now be necessary to have a lock tender and toll collector at the Junction Lock.

Plans were made for the lock operator's house and contract was drawn up. This work will be advertised in the near future.

CARE AND SALE OF STATE EQUIPMENT.

Reference is made to pages 28 to 38, inclusive of the fourteenth annual report of this division regarding the care and sale of State equipment. This report shows the disposition of the equipment at the Dresden Island project; the equipment at the Joliet projects, both the lock and dam and the retaining walls is partially covered in paragraph entitled "State Equipment at Joliet," on page 33 of the above mentioned previous report. The first purchase contract of the Connolly Contracting Company of St. Paul, Minnesota, which had not been executed prior to the first of July, 1931, amounted to $42,114.65. Thereafter the same company purchased additional items totaling $6,742.30 and again in two smaller purchases $55.59 and $79.50, respectively.

Material, equipment and supplies to be sold in accordance with the Civil Administrative Code under sealed bids were carefully classified, given identification numbers, and printed in booklet form to receive bids.

When bids were received it was quite a shock to the writer and others of the department to realize the little demand for contracting equipment. In most cases the bids received indicated very little interest in purchasing the equipment, although practically all of it was in good running order. The only field for sale of the equipment seemed to be on the U. S. Engineer Department work in the immediate vicinity of Joliet or along the waterway.

A careful tabulation of these bids was made but, due to the extent and space required it will not be published in detail in this report.

The approximate appraised valuation of the material sold is $102,000.00.

DREDGE FLEET.

The U. S. Engineer Department advertised for bids for the completion of the dredging in the Marseilles pool, that stretch of the Illinois Waterway extending between the Marseilles Dam and the Dresden Island Lock and Dam on the Illinois River. In their requests for bids the U. S. Engineer Department included a description of the State dredge fleet and the terms of rental or sale acceptable to the State.

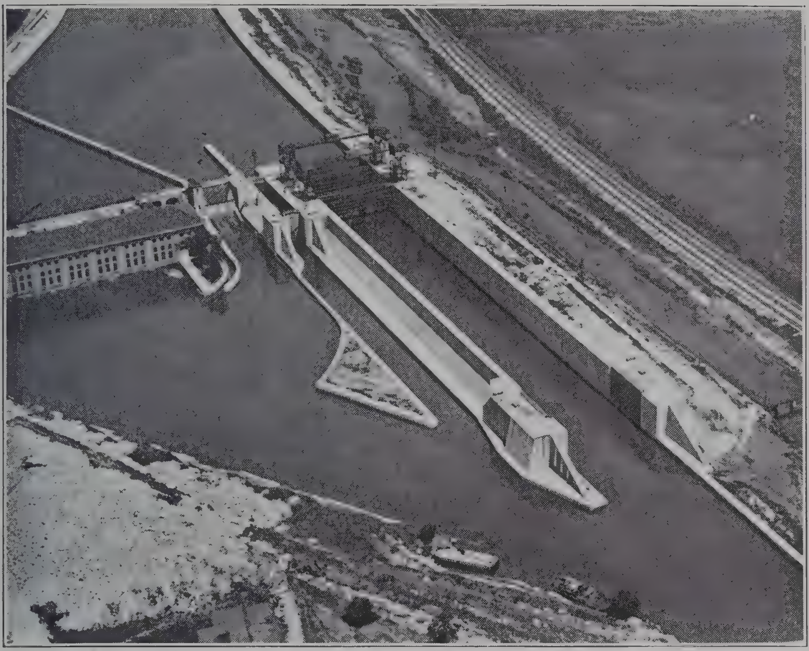
Upon receipt of bids it was found that the lowest bidder did not intend to use the State dredging equipment for the prosecution of his contract. After the contract had been awarded by the U. S. Engineer Department to the R. C. Huffman Construction Company, the low bidder, a portion of their work was sub-contracted to the Congress Construction Company, who rented the fleet from the State upon a daily fee basis. The fleet is at this time largely in steady operation.

The entire fleet was offered at public sale and duly advertised in accordance with the Administrative Code. However, the bids received from prospective purchasers were so low that it was decided to reject all bids.

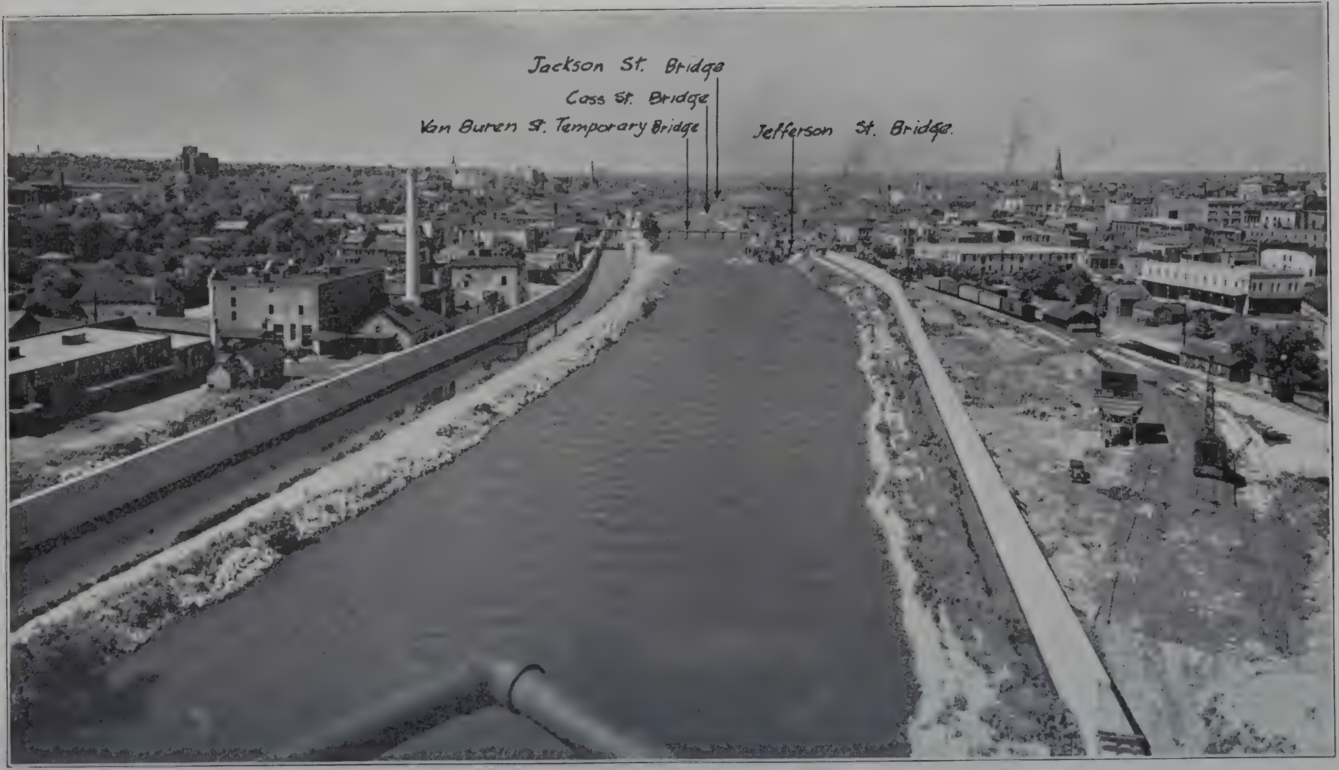
The total inventory as of July 1, 1931 showed an appraised valuation of $162,952.30. This valuation was the same as that arrived at by the State and government appraisers the year previous. No depreciation having been allowed up to July 1, 1931 after that appraisal had been made, accordingly depreciation was figured during the fiscal year and the total inventory for the dredge fleet as of June 30, 1932 was placed at $105,836.80. The total highest bid that could be figured from the miscellaneous bids received for the sale of the fleet amounted to less than $30,000.00.

ILLINOIS WATERWAY LOCKS AND DAMS.

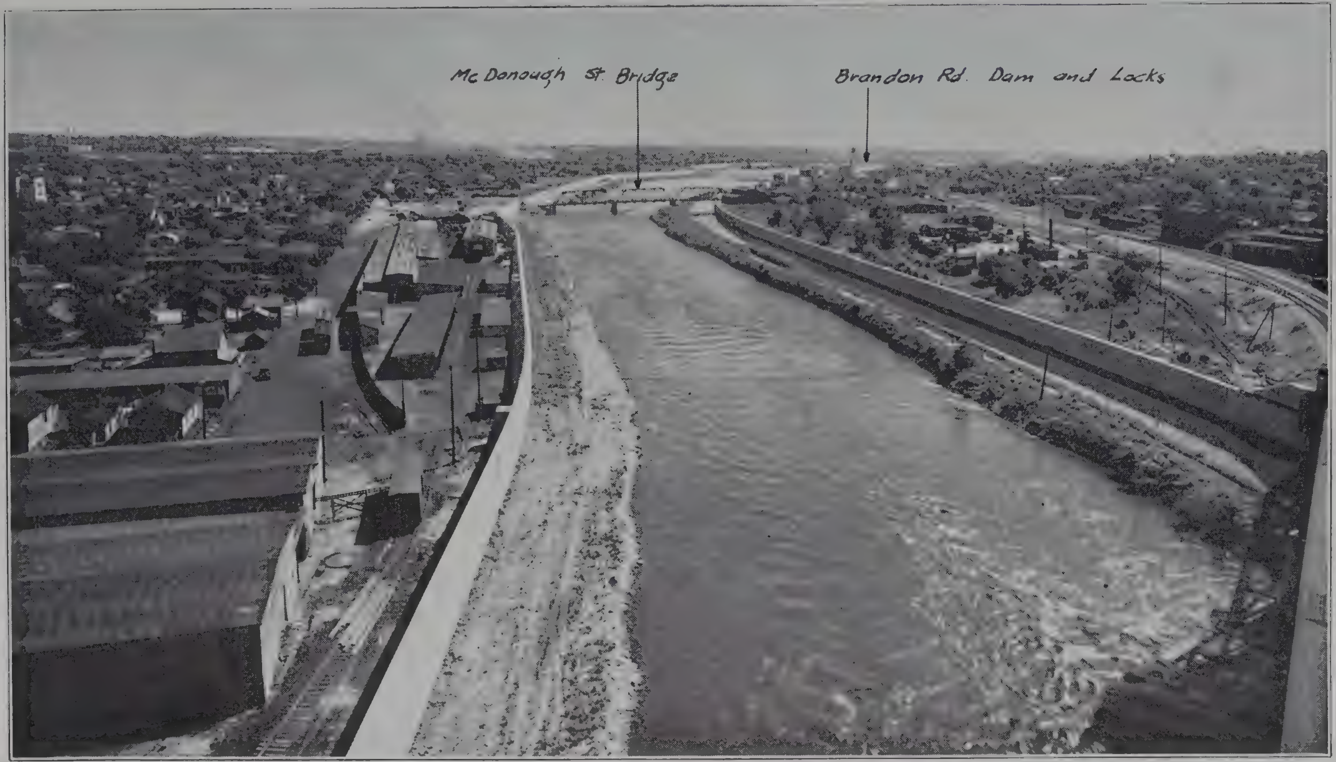
Illustrations.



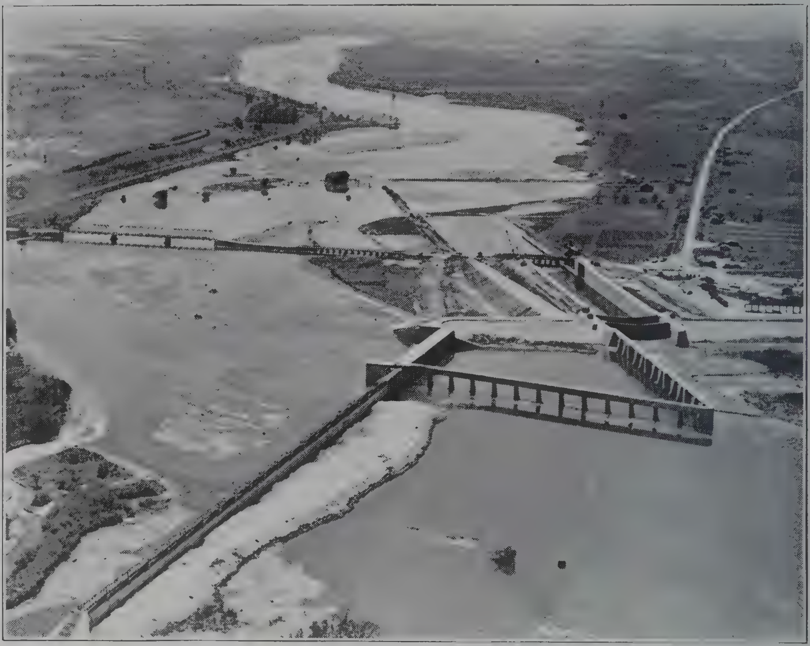
Aeroplane view of Lock No. 1 of The Illinois Waterway located at Lockport, Illinois. This lock connects the Chicago Sanitary and Ship Canal with the Des-Plaines River. Lift of 41 feet. On the left is shown the Sanitary District power house and the original lock. Photo showing status of work on May 17, 1931.—*Photo by Chicago Aerial Survey Co.*



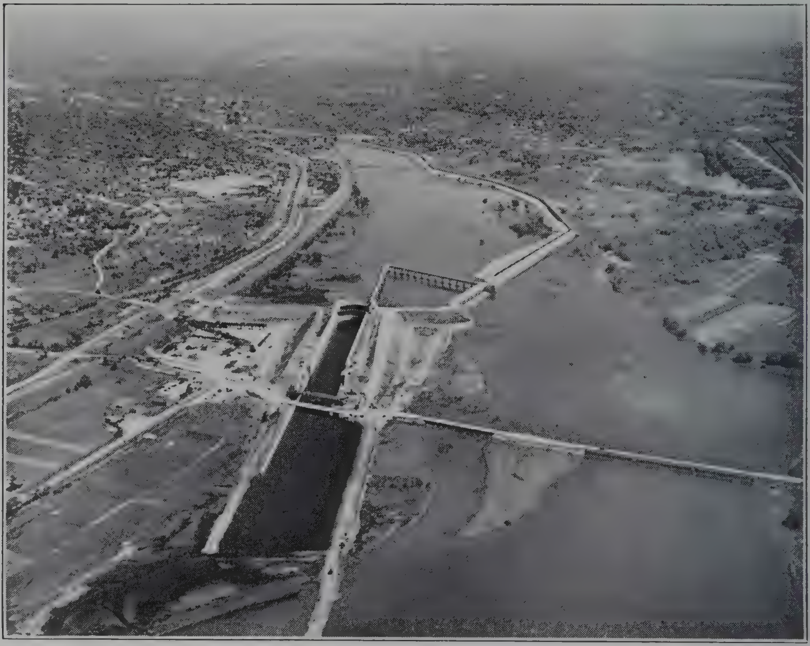
View of the Brandon Road Pool of The Illinois Waterway looking north from the C. R. I. & P. R. R. Bridge through the city of Joliet. The old Illinois and Michigan Canal is shown at the left running parallel to the DesPlaines River. Photo showing status of work in July, 1932.



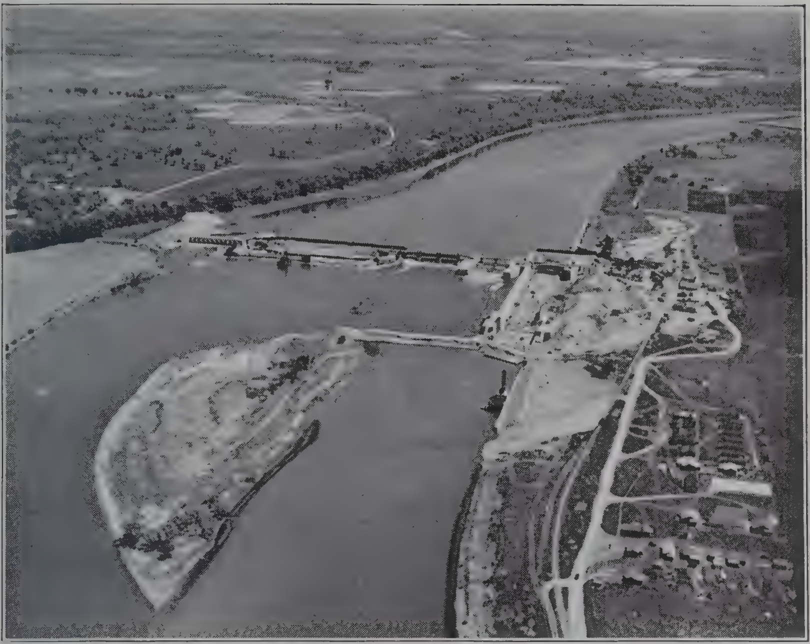
View of the Brandon Road Pool of The Illinois Waterway looking south from the C. R. I. & P. R. R. Bridge through the city of Joliet. The old Illinois and Michigan Canal is shown at the right running parallel to the DesPlaines River. Photo showing status of work in July, 1932.



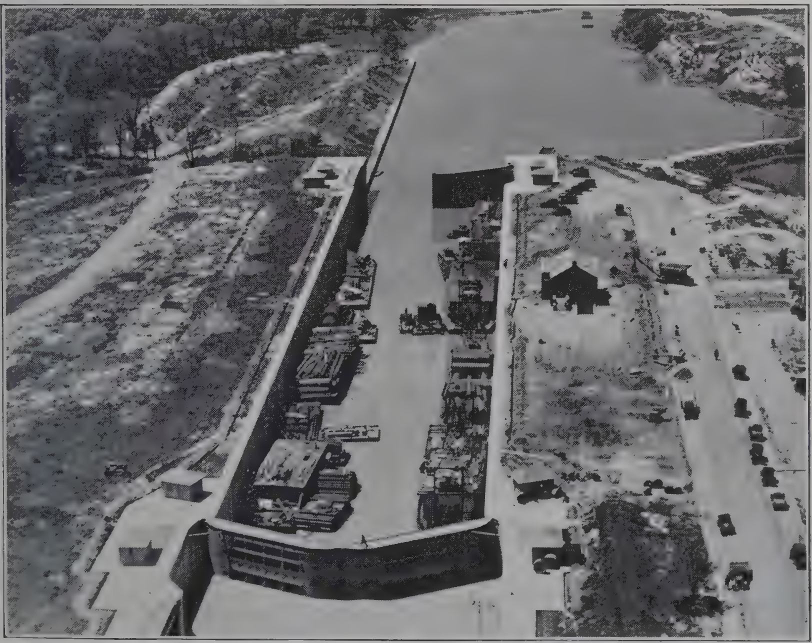
Aeroplane view downstream of Lock No. 2 of The Illinois Waterway, located at Brandon Road, two miles below the city of Joliet. This lock will have a lift of 31 feet. Photo showing status of work on May 18, 1932.—*Photo by Chicago Aerial Survey Co.*



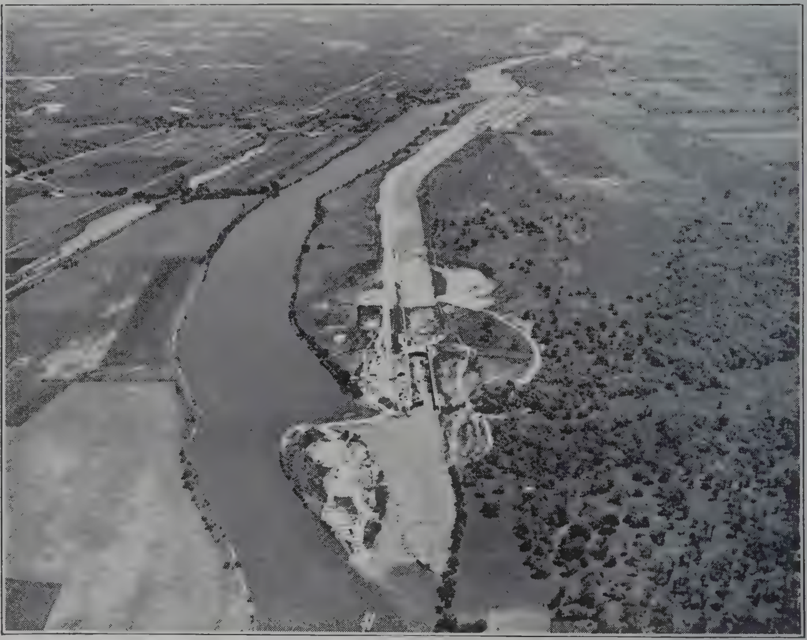
Aeroplane view upstream of Lock No. 2 of The Illinois Waterway, located at Brandon Road. A small junction lock of the Illinois and Michigan Canal is shown with an earth filled dam extending to the Waterway Lock. Photo showing status of work on May 18, 1932.—*Photo by Chicago Aerial Survey Co.*



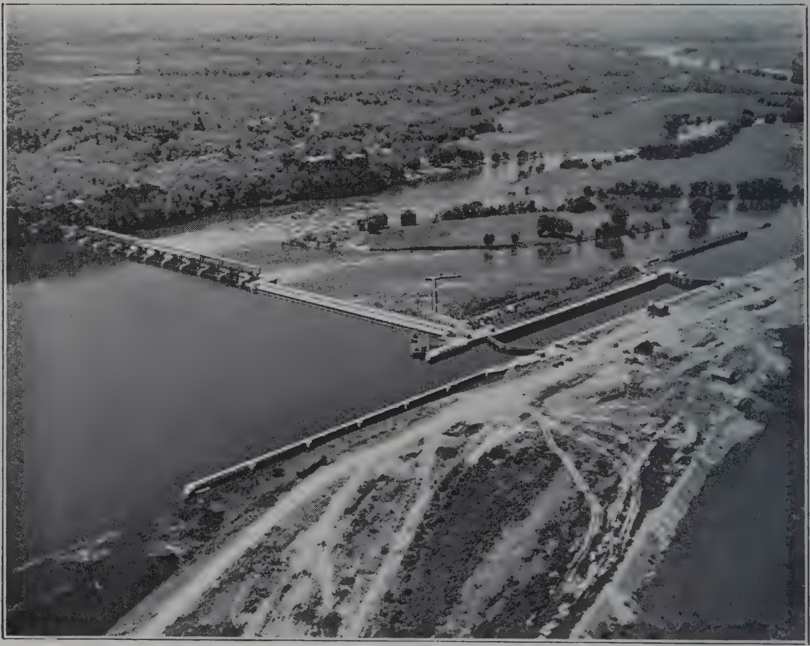
Aeroplane view looking east of Lock and Dam No. 3 of The Illinois Waterway showing status of work on May 18, 1932. Located in the Illinois River at Dresden Island, a short distance below the confluence of the Kankakee and DesPlaines rivers which unite to form the Illinois. On the left of the dam can be seen the head gate structure for the proposed hydro-electric development.—*Photo by Chicago Aerial Survey Co.*



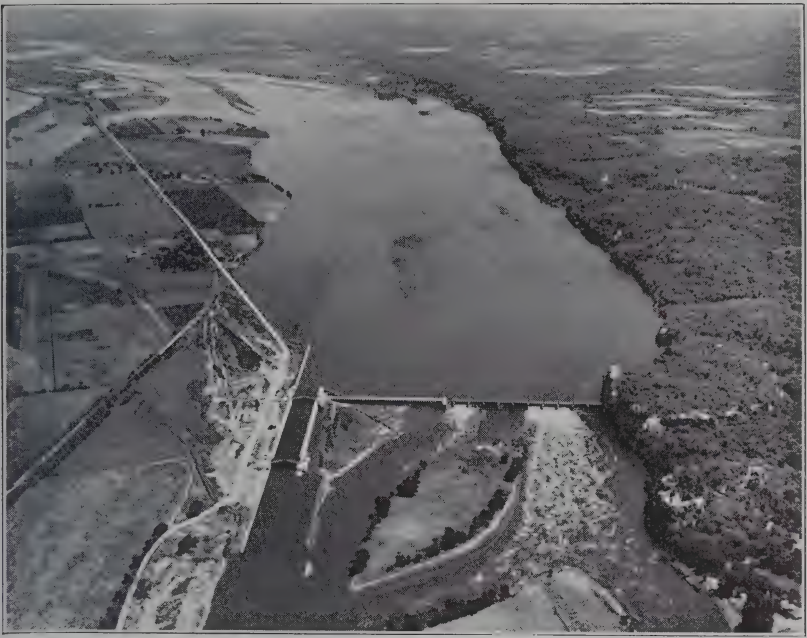
Aeroplane view of Lock No. 4 showing a fleet of construction barges in the lock chamber on May 18, 1932.—*Photo by Chicago Aerial Survey Co.*



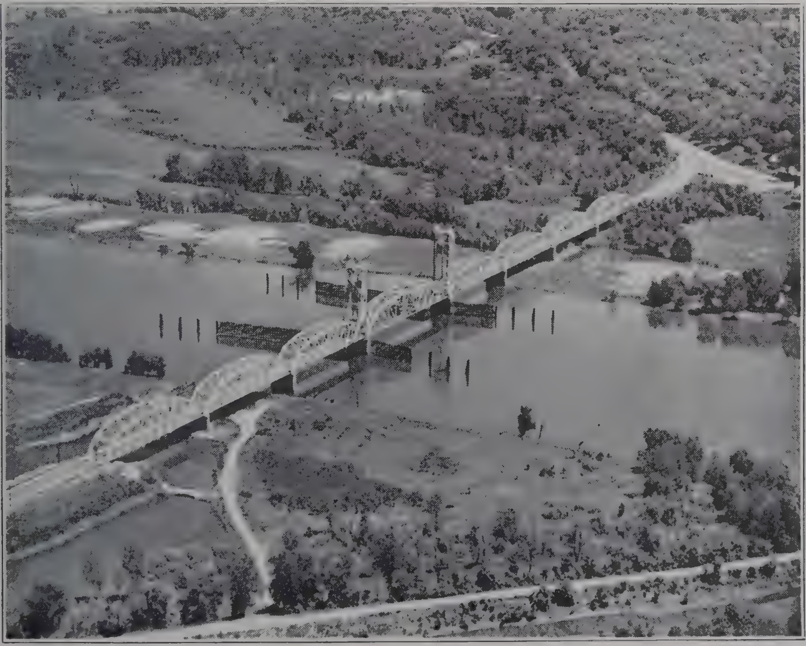
Aeroplane view east of Lock No. 4 of The Illinois Waterway. A canal 200 feet wide and two and one-half miles long connects this lock with the river above the dam built by the United States at the city of Marseilles. Photo showing status of work on May 18, 1932.—*Photo by Chicago Aerial Survey Co.*



Aeroplane view of Lock and Dam No. 5 of The Illinois Waterway on May 18, 1932, located opposite Historic Starved Rock. Below this point the Federal Government has dredged a nine foot channel to the Mississippi River.—*Photo by Chicago Aerial Survey Co.*



Aeroplane view upstream of Lock and Dam No. 5 of The Illinois Waterway on May 18, 1932. Photo showing water above dam raised to pool elevation. Between the lock and taintor gates of the dam may be seen the head gate structure for the proposed hydro-electric development.—*Photo by Chicago Aerial Survey Co.*



Aeroplane view on May 18, 1932 of the State Highway Bridge, located at the city of LaSalle, Illinois—*Photo by Chicago Aerial Survey Co.*

ILLINOIS WATERWAY.

Hydro-Electric Power Development Projects.

C. M. Briggs, *Hydraulic Engineer.*

PRELIMINARY PERMIT.

On November 22, 1920, the State of Illinois applied for preliminary permit to develop the water power resulting from the construction of the new dams to be built for navigation purposes. The State was granted a preliminary permit dated January 14, 1922, which was accepted on behalf of the State by Col. C. R. Miller, then director of the department. On June 24, 1924, the Federal Power Commission granted the State an extension of time till January 14, 1925, to allow completion of the studies necessary to make application for license to construct.

LICENSE APPLIED FOR.

Application for license was filed January 2, 1925, contemplating the use of 10,000 cu. ft. per second diversion from Lake Michigan. The Federal Power Commission then notified the State that action on the license would be deferred pending a decision as to diversion of water from Lake Michigan by the Sanitary District of Chicago, which matter was then before the Supreme Court of the United States. As a result of the decision it appeared to many nontechnical critics that the project would hardly warrant further consideration, but the Federal Power Commission requested through the War Department that if the State so desired it should submit a supplemental application amended to conform to the terms of the decision and the rules of the Federal Power Commission.

NEW DATA.

New data was compiled covering a period of sixteen years of observations of natural stream flow. To the average natural flows were added the reduced diversion averages. The tailwater elevations corresponding to the computed flows were then plotted together with the mass curves for the flow and the power was computed and plotted on the same curve sheets (See plates Nos. 1 to 9, inclusive).

NEW TURBINE.

Former plans were based on the use of Francis type turbines which were then considered the best for low head installations. At best these turbines were not very efficient under any great range of flow, head or load, but would have very high efficiency for a fixed best condition. This made it necessary to use a large number of small units to have a good efficiency over any range of load, but there was no way of obtaining the most out of varying amounts of water or fluctuations of head.

Prof. Dr. Victor Kaplan of Brunn, Czecho-Slovakia, developed a new runner and gate design which has been introduced to this country since the original application for license was made in 1925. The new turbine is in the nature of a ship's propeller with automatically adjustable blades so arranged that the automatic governor which regulates the flow through the wicket gates to meet the varying load, at the same time alters the pitch of the runner blades to keep a maximum efficiency under the same change of conditions. This feature results in a high efficiency over a wide range of all three conditions load, flow and head, thereby making it possible to reduce the number of units required to produce any given amount of power as compared to the Francis wheels. There is also an added advantage in the fact that the speed of these wheels is higher, which allows the use of smaller dimension generators and thereby a saving in first cost. (See plate No. 10 on page 108.)

An extensive investigation was made of installations of these Kaplan wheels in the most recent plants in America and they were found to be uniformly successful.

APPLICATION OF THE KAPLAN WHEEL TO THE DESIGN

Using the characteristics of the Kaplan turbines applied to the computed future flows in the waterway, the power output was determined. The following table shows the selected equipment:

TABLE I.

Location.	Turbines.				Generators.			
	Number units.	Dia.	h ave.	Rated at 92% max. head.	R. P. M.	K. W. 95% each.	K. V. A. 80% P. E.	Total K. V. A. 80% P. F.
Brandon Road	5	120 in.	33.4	6,400	150	4,281	5,351	26,755
Dresden Island	6	160 in.	18.1	5,400	90	3,600	4,500	27,000
Marseilles	4	120 in.	23.0	4,000	128.6	2,720	3,400	13,600
Starved Rock	9	141 in.	14.4	3,000	80	(4)2,000	2,500	10,000
						(5)1,500	1,870	9,300
								86,655 K. V. A.

Maximum 107,400 H. P.............86,655 K. V. A.

Cost estimates were made for the plants as follows:

TABLE II.

Brandon Road	$1,188,450.00	
Dresden Island	1,317,320.00	
Marseilles	927,200.00	
Starved Rock	1,696,810.00	
Total contract cost		$5,129,780.00
Engineering, legal and contingencies, 10 per cent		512,980.00
Grand total		$5,642,760.00

The gross revenues are estimated based on sale of power at 4 mills and at 5 mills per K.W. hour. To obtain the net revenue, charges of 2 per cent for maintenance and 2 per cent for sinking fund or depreciation on the full cost of each plant together with operators' salaries were deducted from the gross. These possible returns are shown (See Tables Nos. III, IV and V) to be well worth developing and would be sufficient to provide an adequate return for the entire canal as well as the power plants.

A program was formulated for construction and the financial set-up was worked upon the basis of one plant to be constructed at Brandon Road in 1933, Dresden Island in 1934, Marseilles in 1935 and Starved Rock in 1936.

SUPPLEMENTAL APPLICATION.

The supplemental application was forwarded to the Federal Power Commission on February 4, 1932, and from time to time additional information and data was furnished to the War Department and the Federal Power Commission as requested.

MARSEILLES PLANT POSTPONED.

Upon the filing of the application, the Marseilles Land and Water Power Co. of Marseilles filed objections to granting license to the State especially as to the development of Marseilles. Informal answers were prepared by this division, but as no court action was taken by the objectors no formal appearance was made in the matter by the Division of Waterways. However, as it appeared that legal action would be necessary to adjudicate the rights of the objector and the State before a plant could be built at Marseilles, the supplemental application was amended to include only the other three stations, thus leaving Marseilles to be taken up when the legal rights are determined.

LICENSE GRANTED.

On November 19, 1932, notice was received that the Federal Power Commission had acted favorably on the petition and issued license to construct the power plants at Brandon Road, Dresden Island and Starved Rock.

Plans and Specifications.

BRANDON ROAD PROJECT.

In furnishing the information required by the War Department and the Federal Power Commission plans had to be prepared for one station. Though lacking in personnel, this division had carried the work forward to such an extent that comparatively little work remains to be done on plans and specifications and with proper authorization, the Brandon Road unit could be advertised for bids in thirty days.

PLANT DESIGN.

The plant designed for Brandon Road consists of five units controlled by supervisory panel in the operator's room with provision for remote control. Each unit will consist of an automatic adjustable blade turbine to develop 6000 HP. at 33 ft. head at 91 per cent efficiency direct connected to a 5300 K.V.A. 6600 V. alternating current individually cooled generator. Each unit will be provided with an individual panel and oil circuit breaker and switching and will be controlled by an actuator of high sensitivity.

The units will be served by an electric crane of 30 tons capacity on the main hoist and two 10-ton hand hoists.

The building will be of simple design treated architecturally in a modernistic manner. The exterior walls will be of face brick and cast stone trim and the interior of salt glazed brick. The floor will have a cement finish colored to harmonize with the equipment and walls. About 60 per cent of the wall area is glass so that ample provision has been made for natural light and ventilation. The artificial illumination will be semi-indirect and sufficient emergency outlets have been provided.

The shop floor is at the same elevation as the crest of the dam and at the front of the building. This arrangement makes repair work convenient as the generator floor is entirely independent, being depressed 15 feet.

As compared to plants of similar capacity the structure is very compact having about 50 per cent less cubage than most plants of the same size.

No heating will be provided as the generators will furnish sufficient heat during the winter months.

As the head gate structure and ice boom are already built, the only addition necessary will be the trash racks and rake.

Gates are provided on the draft tube outlets with a chain hoist and trolley to remove them for inspection and repair.

A set of duplex vertical pumps will care for draining the lower inspection gallery and dewatering the draft tubes.

Provision has been made for transformers and transmission tower, but the size and type of this equipment depends on the requirements of the power purchaser so details are not included in the design.

Every effort has been made to make this plant equal if not superior to any yet built for utility of operation, economy of construction, simplicity of design and attractiveness of appearance.

Plate 11—Location plan of Brandon Road plant.
Plate 12—Down stream elevation Brandon Road plant.
Plate 13—Perspective of Brandon Road plant.

DRESDEN ISLAND PROJECT.

The dam has been built at Dresden Island including head gate structures providing for six units of 5400 H. P. each. No work has been done on the detailed plans.

STARVED ROCK PROJECT.

The dam has been built including head gate structure providing for ten units of 3000 H. P. each. The possibility of increasing the head and the storage by the use of flash boards may increase the size of the units and reduce their number depending on the necessary legislation. The additional income would well warrant such action.

FINANCIAL SET-UP.

Arranging the tabulated incomes according to the proposed schedule of construction (see table No. VI), it appears that the three plants will pay for themselves in less than six years and after that produce a net income to the State of over half a million dollars a year. That figure is conservative since it is based on a very low sale price of stream run power, on more than ample operating costs and the flow conditions in the rivers are better than those used in the design computations. For example the mass curves of flow compound the peaks of natural flow with the peaks of sanitary diversion, a condition which seldom occurs and there is considerable pondage for peak power development which makes the project more desirable and worth more financially to the local power pool. The return should be near 5 mills as the modern practice of remote control coupled with the storage of energy behind the dam available on the line in thirty to sixty seconds as compared to thirty minutes for steam gives a flexibility of output most desirable to industry.

HYDRO-ELECTRIC DEVELOPMENT OPERATING STATEMENT.

TABLE III. YEARS 1933-34-35.

Station.	K. W. hours generated and sold.	Fixed capital.	Operative revenue.			Operative expense.			Net revenues.			(Average) kilowatts per hour generated	Ordinary horse power generated	Fixed capital per horse power.	Fixed capital per kilowatt.
			Amount.	K.W.H. (cents.)	%	Amount.	K.W.H. (cents.)	%	Amount.	K.W.H. (cents.)	%				
Brandon Road	162,460,020	$1,307,295	$ 649,840	0.4	49.76874	$ 88,592	.0543157	6.7767	$561,248	.345468	42.93200	18,456	26,169	$ 49.96	$ 70.49
			812,300	0.5	62.1359	88,592	.05933257	6.7267	723,708	.445468	55.3592				
Dresden Island	105,291,274	1,449,052	421,165	0.4	29.0648	94,262	.0895248	6.50508	326,903	.310476	22.65936	12,020	16,960	85.43	120.55
			526,456	0.5	36.3310	94,262	.0895249	6.50508	432,194	.410476	29.8259				
Marseilles	64,662,921	1,019,920	258,652	0.4	25.3600	77,097	.119229	7.55912	181,555	.280771	17.80090	7,382	10,416	97.92	138.16
			323,315	0.5	31.7000	77,097	.119229	7.55912	246,218	.380771	24.1409				
Starved Rock	70,526,186	1,866,491	282,104	0.4	15.1141	110,906	.157255	5.94195	171,198	.242745	9.1722	8,051	11,360	164.30	231.83
			352,631	0.5	18.89272	110,906	.157255	5.94195	241,725	.342745	12.95077				
All plants	402,940,401	$5,642,758	$1,611,762	0.4	28.5633	$370,857	.092037	6.57226	$1,240,905	.307963	21.9911	45,999	64,905	$86.94	$122.67
			2,014,702	0.5	35.7042	370,857	.092037	6.57226	1,643,845	.407963	29.13194				

TABLE IV. YEARS 1936-37-38.

Station.	K. W. hours generated and sold.	Fixed capital.	Operative revenue.			Operative expense.			Net revenues.			(Average) kilowatts per hour generated	Ordinary horse power generated	Fixed capital per horse power.	Fixed capital per kilowatt.
			Amount.	K.W.H. (cents.)	%	Amount.	K.W.H. (cents.)	%	Amount.	K.W.H. (cents.)	%				
Brandon Road	139,029,925	$1,307,295	$556,120	0.4	42.53975	$ 88,592	.0637215	6.7767	$467,528	.3362785	35.76300	15,871	22,394	$ 58.38	$ 82.34
			695,150	0.5	53.17468	88,592	.0637215	6.7767	606,558	.4362785	46.39794				
Dresden Island	97,124,533	1,449,052	388,498	0.4	26.81235	94,262	.0970527	6.50508	294,236	.302947	20.30541	11,087	15,644	92.63	130.70
			485,623	0.5	33.51315	94,262	.0970527	6.50508	391,361	.402947	27.00807				
Marseilles	61,261,615	1,019,920	245,047	0.4	24.02610	77,097	.1258487	7.55912	167,950	.274152	16.46697	6,993	9,867	103.37	145.84
			306,308	0.5	30.03255	77,097	.1258487	7.55912	229,211	.374152	22.47342				
Starved Rock	69,804,115	1,866,491	279,216	0.4	14.9594	110,906	.158881	5.94195	168,310	.241119	9.01745	7,969	11,245	165.99	234.204
			349,021	0.5	18.6993	110,906	.158881	5.94195	238,115	.341119	12.7573				
All stations	367,220,188	$5,642,758	$1,468,881	0.4	26.0312	$370,857	.1009903	6.57226	$1,098,024	.2990097	19.4589	41,920	59,150	$95.397	$134.608
			1,836,100	0.5	32.5390	370,857	.1009903	6.57226	1,465,245	.3990097	25.9668				

TABLE V. YEAR 1939.

Station.	K. W. hours generated and sold.	Fixed capital.	Operative revenue.			Operative expense.			Net revenues.			(Average) kilowatts per hour generated	Ordinary horse power generated	Fixed capital per horse power.	Fixed capital per kilowatt.
			Amount.	K.W.H. (cents.)	%	Amount.	K.W.H. (cents.)	%	Amount.	K.W.H. (cents.)	%				
Brandon Road	77,111,095	$1,307,295	$308,444	0.4	23.599	$ 88,592	.11488	6.7767	$219,852	.28512	16.817	8,803	12,421	$105.25	$148.50
			385,555	0.5	29.492	88,592	.11488	6.7767	296,963	.38512	22.715				
Dresden Island	72,797,664	1,449,052	291,190	0.4	20.0952	94,262	.12948	6.5051	196,928	.27052	13.590	8,310	11,726	123.58	174.37
			363,988	0.5	25.119	94,262	.12948	6.5051	269,726	.37052	18.613				
Marseilles	45,134,551	1,019,920	180,538	0.4	17.701	77,097	.17081	7.5592	103,441	.22918	10.142	5,152	7,270	140.29	197.97
			225,673	0.5	22.1265	77,097	.17081	7.5592	148,576	.32919	14.567				
Starved Rock	58,238,131	1,866,491	232,952	0.4	12.4807	110,906	.190435	5.9419	122.046	.209565	6.5388	6,648	9,381	198.96	280.76
			291,190	0.5	15.6009	110,906	.190435	5.9419	180,284	.309565	9.1590				
All plants	253,781,441	$5,642,758	$1,013,114	0.4	17.9544	$370,857	.146422	6.5722	$642,267	.253578	11.3822	28,913	40,798	$138.32	$195.16
			1,266,406	0.5	22.4430	370,857	.146422	6.5722	895,549	.353578	15.8708				

TABLE VI.

ILLINOIS WATERWAY POWER DEVELOPMENT NET INCOME PROSPECTUS.

Net Income at 0.5c per K. W. Hr.

Year.	Brandon Road.	Dresden Island.	Starved Rock.	All stations.
1934	$723,708	------	------	$ 723,708
1935	723,708	$432,194	------	1,155,902
1936	606,558	391,361	$238,115	1,236,034
1937	606,558	391,361	238,115	1,236,034
1938	606,558	391,361	238,115	1,236,034
1939	296,963	269,726	180,284	746,973
Total	$3,564,053	$1,876,003	$ 894,629	$6,334,685
Construction cost	1,307,295	1,449,052	1,866,401	4,622,838
Net surplus	$2,256,758	$426,951	$—971,862	$1,711,847

Annual net income after 1938—$746,973 for 1,500 c. f. s. diversion.

Net income at 0.4c per K. W. Hr.

Year.	Brandon Road.	Dresden Island.	Starved Rock.	All stations.
1934	$561,248	------	------	$561,248
1935	561,248	$326,903	------	888,151
1936	467,528	294,236	$168,310	930,074
1937	467,528	294,236	168,310	930,074
1938	467,528	294,236	168,310	930,074
1939	219,852	196,928	122,046	538,826
Total	$2,744,932	$1,406,539	$ 626,976	$4,778,447
Construction cost	1,307,295	1,449,052	1,866,491	4,622,838
Net surplus	$1,437,637	$—42,513	$—1,239,515	$155,609

Annual net income after 1938—$538,826 for 1,500 c. f. s.

NOTE.—Deductions from gross income have been made in arriving at net income consisting of—

2% of plant cost for maintenance.

2% of plant cost for depreciation.

$36,300 per year for operation for each plant.

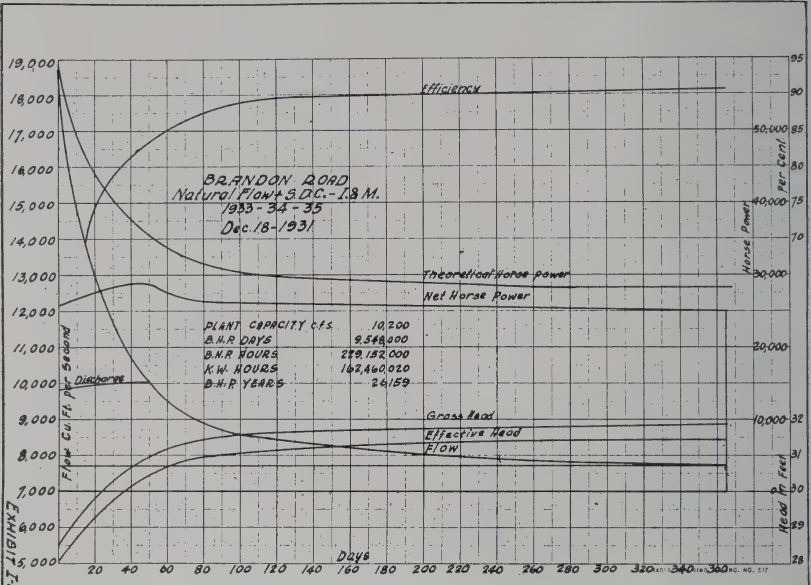


EXHIBIT I-21

PLATE 1

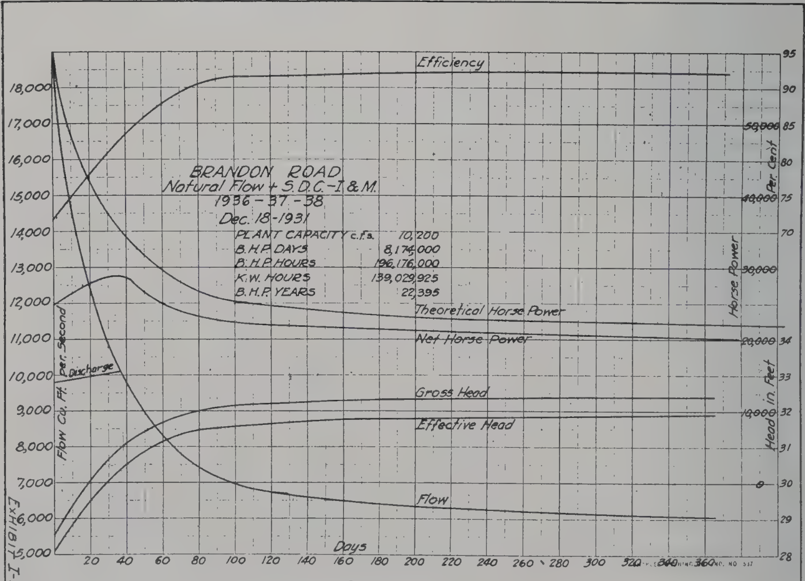


EXHIBIT I-22

PLATE 2

EXHIBIT I-23

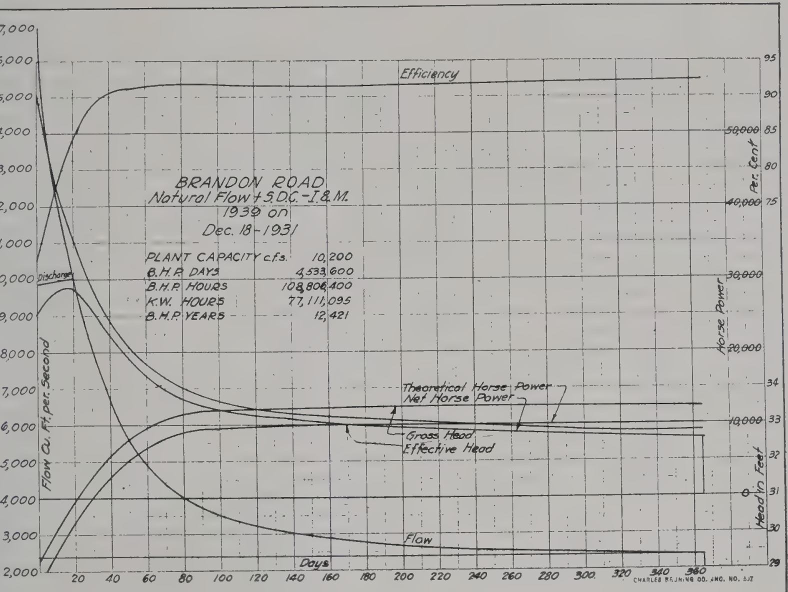


PLATE 3

EXHIBIT I-27

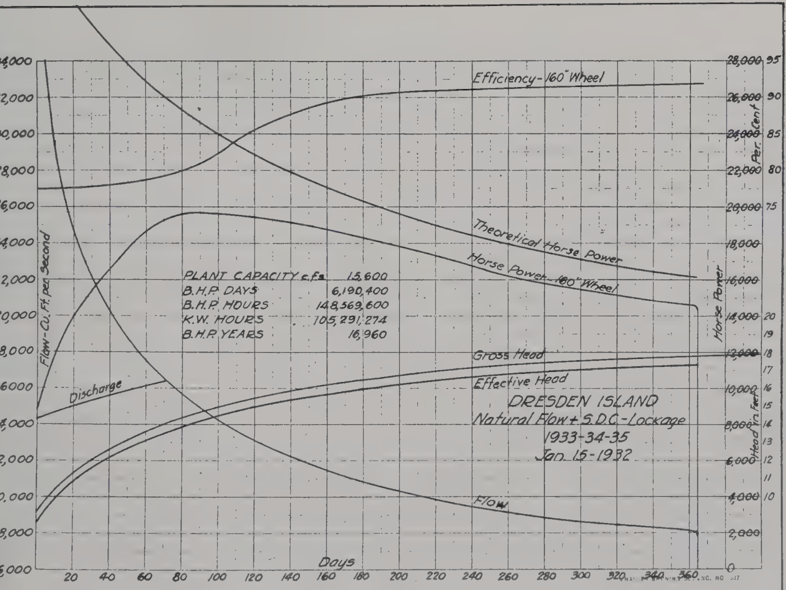


PLATE 4

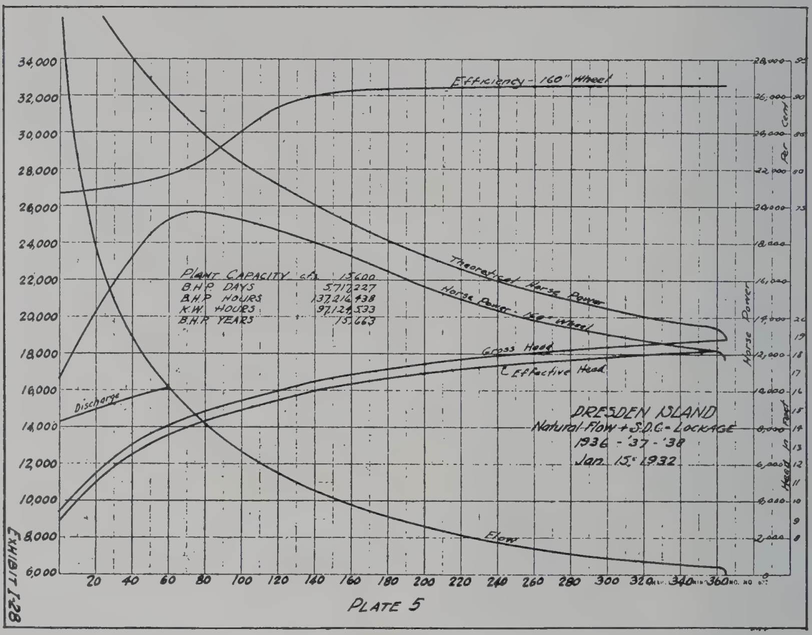


PLATE 5

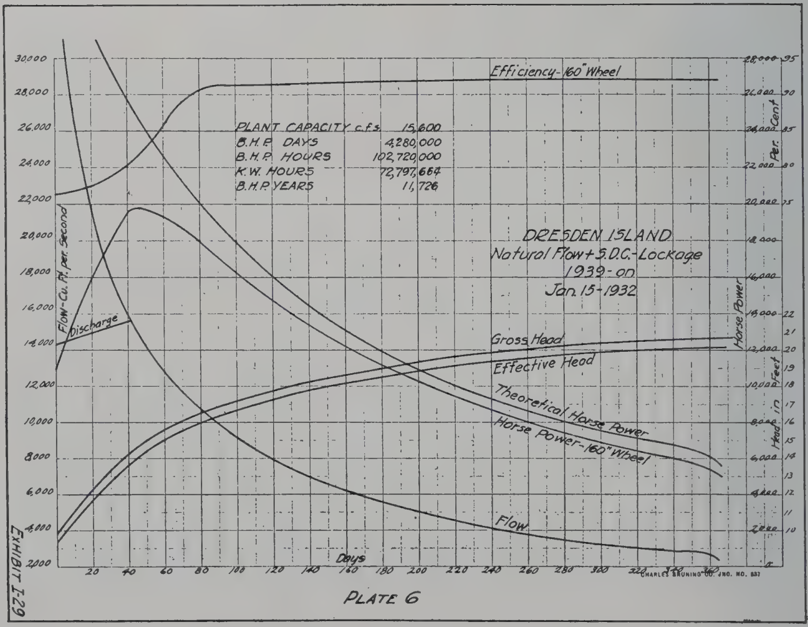


PLATE 6

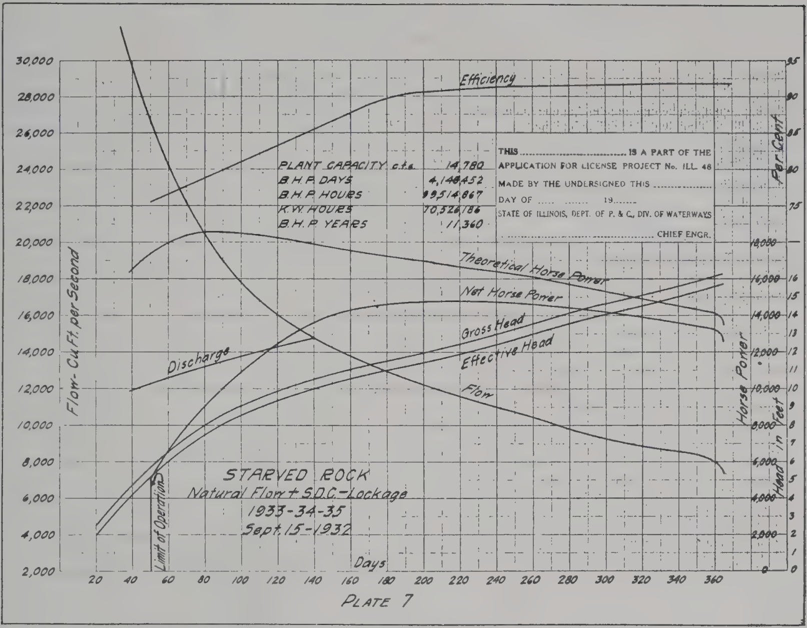


PLATE 7

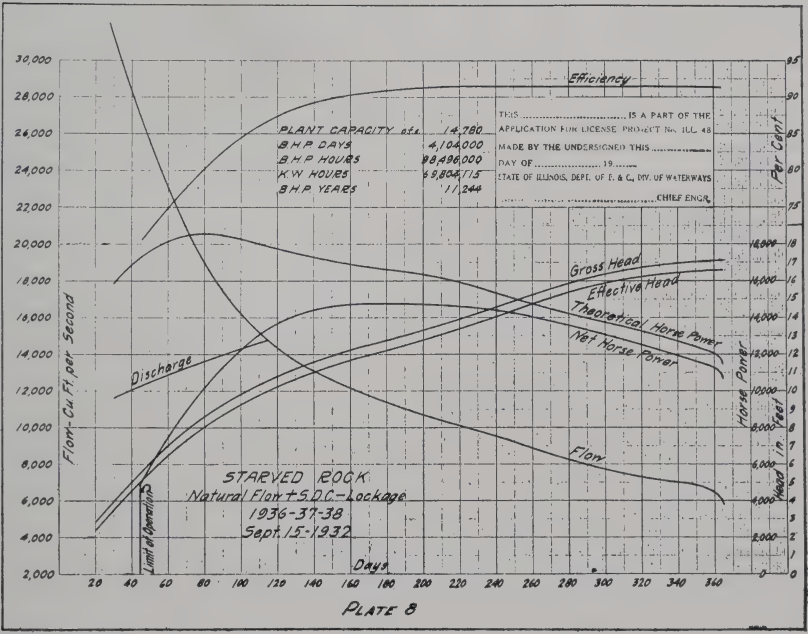
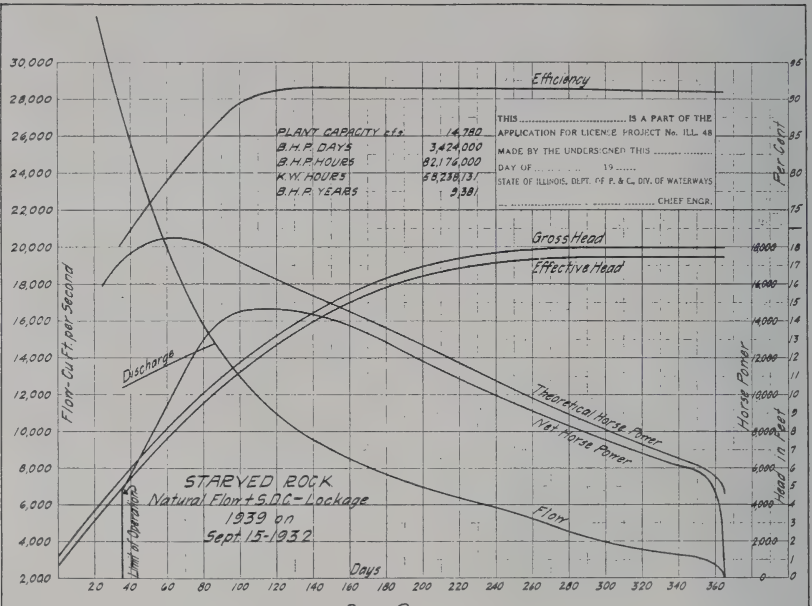


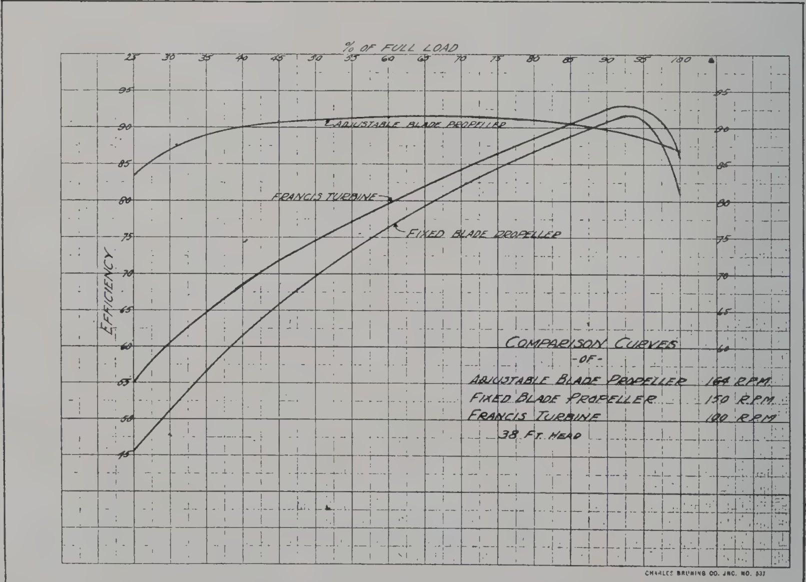
PLATE 8



PLANT CAPACITY c.f.s.	14,780
B.H.P. DAYS	3,424,000
B.H.P. HOURS	82,176,000
K.W. HOURS	58,238,131
B.H.P. YEARS	9,381

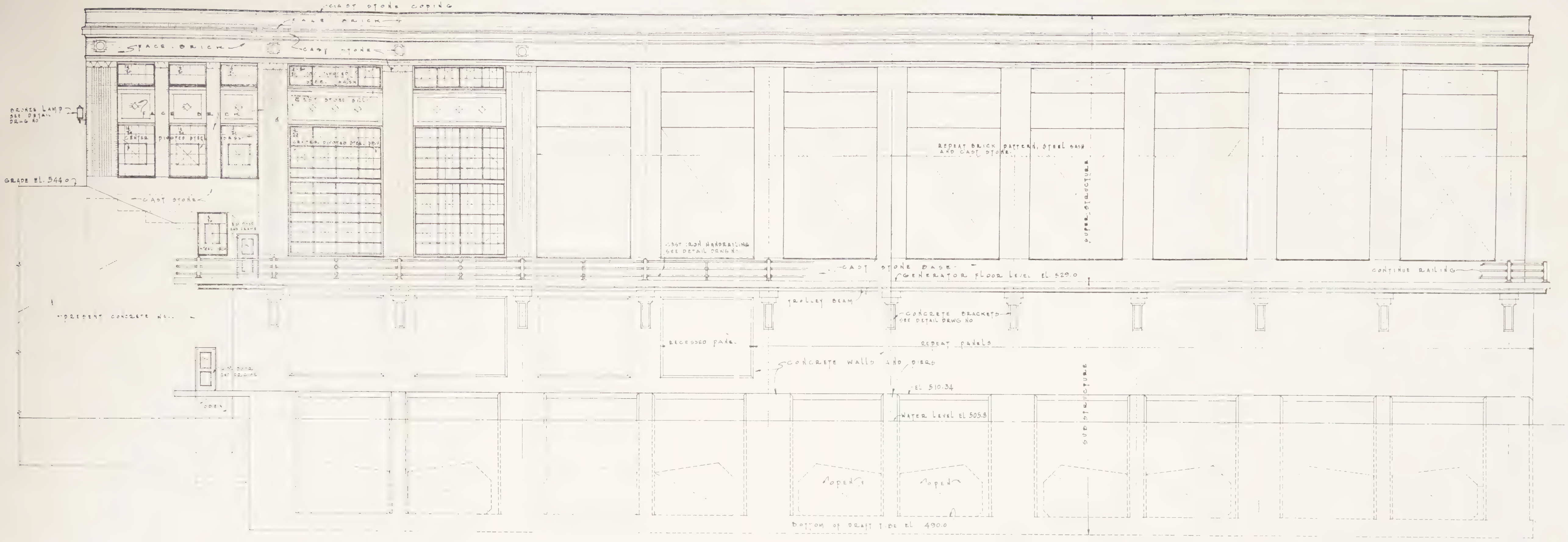
THIS .... IS A PART OF THE
APPLICATION FOR LICENSE PROJECT No. ILL. 48
MADE BY THE UNDERSIGNED THIS ....
DAY OF .... 19......
STATE OF ILLINOIS, DEPT. OF P. & C., DIV. OF WATERWAYS
.... CHIEF ENGR.

PLATE 9



COMPARISON CURVES
-OF-
ADJUSTABLE BLADE PROPELLER 164 R.P.M.
FIXED BLADE PROPELLER 150 R.P.M.
FRANCIS TURBINE 100 R.P.M.
38 FT. HEAD

PLATE 10



DOWNSTREAM ELEVATION

SCALE

BRANDON ROAD HYDRO-ELECTRIC STATION.

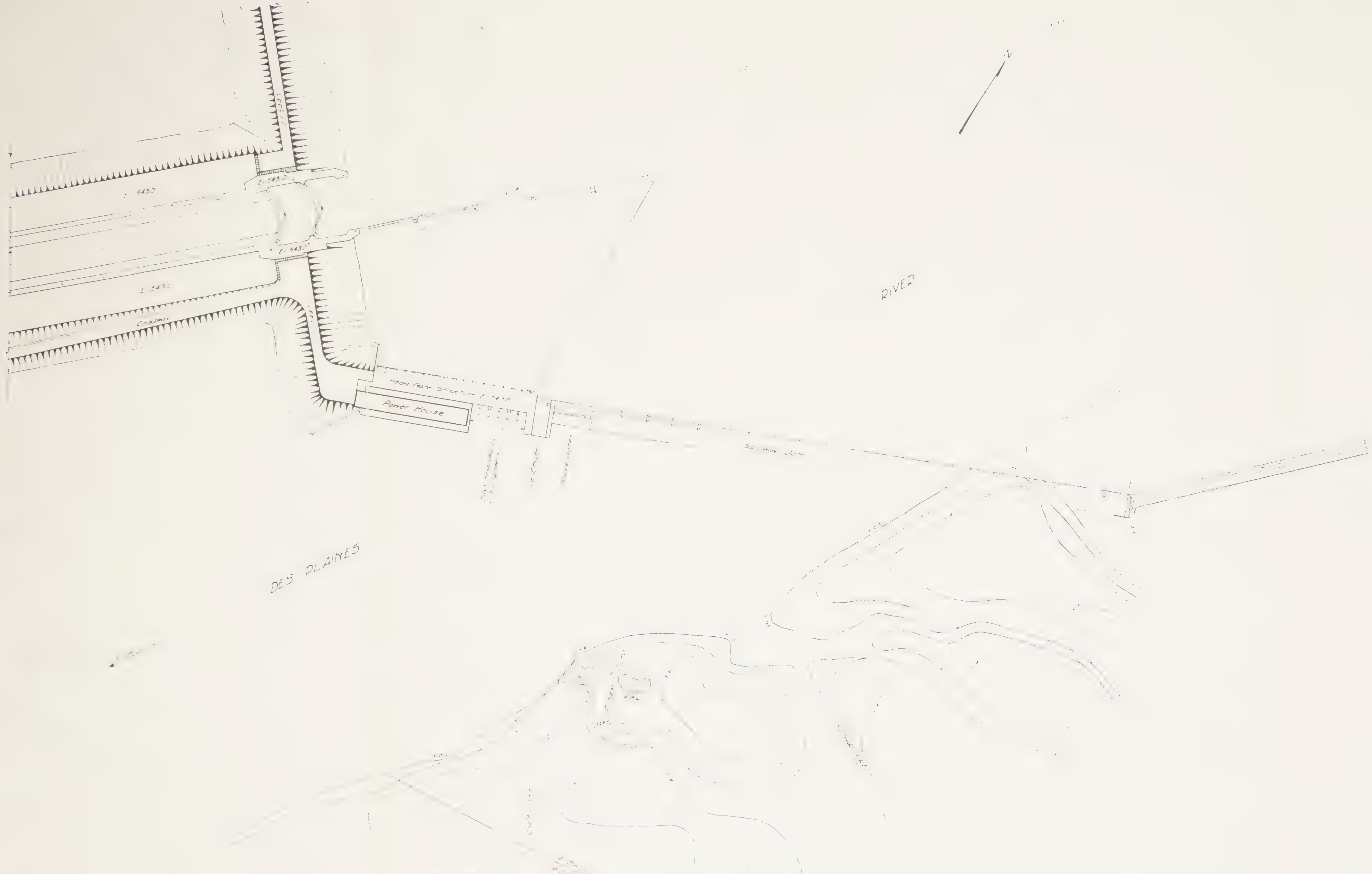
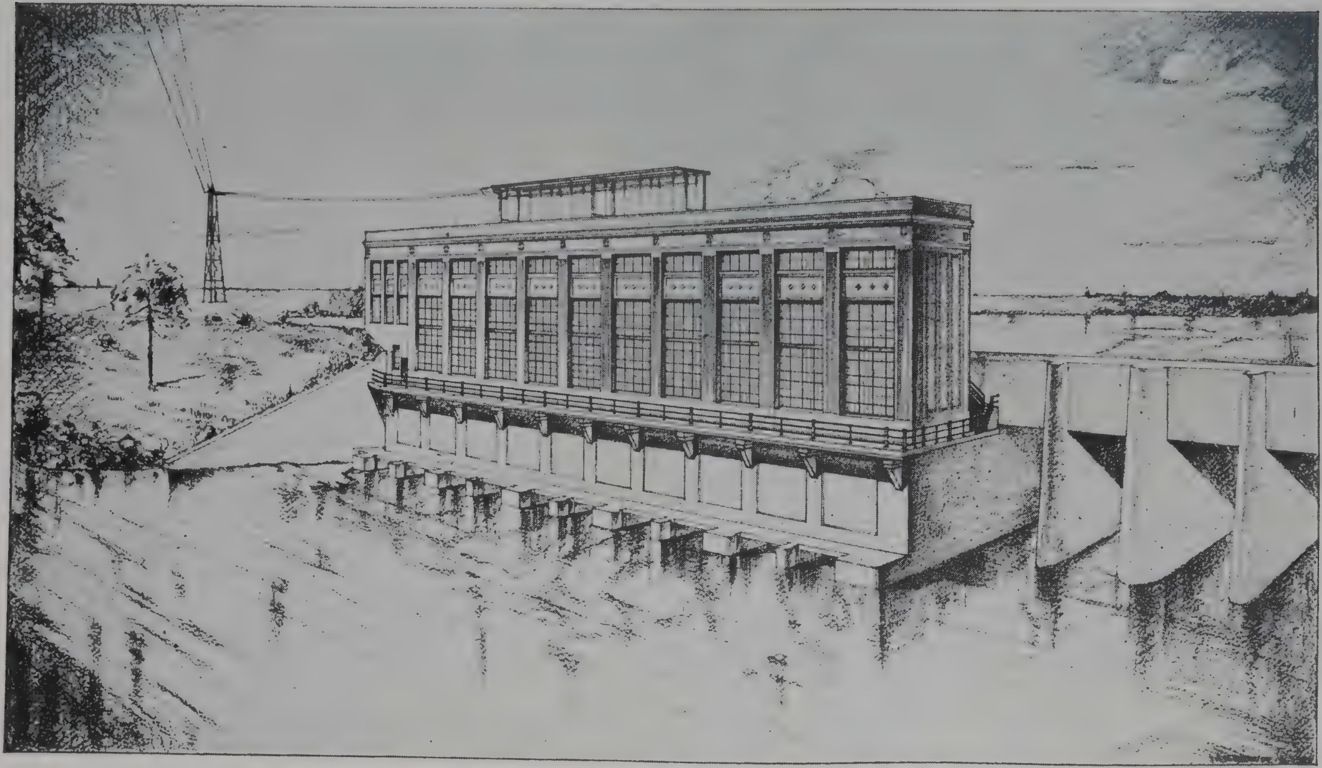


EXHIBIT L-1 (AMENDED)
STATE OF ILLINOIS
DEPARTMENT OF PURCHASES AND CONSTRUCTION
DIVISION OF WATERWAYS
BRANDON ROAD
HYDRO-ELECTRIC STATION

LOCATION PLAN



PROPOSED 25,000 KW HYDRO-ELECTRIC STATION AT BRANDON ROAD.

The sale of power will produce a very considerable revenue to the State, see page 99.

FLOOD RELIEF REPORT.

By L. C. Craig, *Division Engineer.*

This report for the year ending June 30, 1932, covers flood relief done under Flood Relief Acts passed by the Fifty-seventh General Assembly. These acts were reappropriations of unexpended funds remaining at the end of the preceding biennium and consisted of the following:

House Bill No. 698, reappropriating $517,584.99 for the Illinois River Valley, House Bill No. 697, reappropriating $373,419.24 for all rivers of the State other than the Illinois River and its tributaries, House Bill No. 700, reappropriating $16,552.30 for emergency flood relief and House Bill No. 699, reappropriating $12,378.37 for repairs to the levees of the South Quincy and Indian Grave Drainage Districts.

ILLINOIS RIVER VALLEY.

The work done under House Bill No. 698 reappropriating $517,584.99 for flood relief in the Illinois River Valley, consisted largely of levee enlargement in cooperation with the Federal Government and was a continuation of work started during the previous year.

The Federal Flood Control Act of 1928, provided that funds for levee construction might be expended by the Federal Government on tributaries of the Mississippi River insofar as such tributaries are affected by the backwaters of the Mississippi, on condition that the states or local levee districts, furnish right-of-way and pay 33⅓ per centum of the cost of the work. On account of large financial losses due to the disastrous floods of 1926 and 1927, and also on account of the financial stringency of the past two years, drainage districts found it impossible to raise the necessary funds to enable them to secure aid from the Federal Government. These districts, therefore, asked the State to pay the one-third cost required by the Federal Government. Under the provisions of House Bill No. 698, State aid was granted and this State aid up to December 1, 1932, has made possible the expenditure of $1,569,201.34 of Federal funds.

The work has consisted solely of the enlargement of existing levees. When this work is completed, over 100,000 acres of Illinois River bottom lands will have received flood protection in accordance with plans made by the Federal Government and approved by the State.

In cooperation with the Federal Government, the following levee projects have been undertaken along the Illinois River. Cost figures given are to December 1, 1932.

PROJECTS COMPLETED.

District.	Federal aid.	State aid.	Total aid.
City of Beardstown (levee revetment)	$ 31,958 10	$15,979 05	$ 47,937 15
Little Creek Drainage and Levee District	83,109 66	41,554 83	124,664 49
Nutwood Drainage and Levee District	121,508 05	65,754 03	187,262 08
Eldred Drainage and Levee District	184,662 30	92,331 15	276,993 45
Lost Creek Drainage and Levee District	14,629 89	9,314 57	23,944 46
Crane Creek Drainage and Levee District	31,066 67	15,533 33	46,600 00
South Beardstown Drainage and Levee District	38,266 67	19,133 33	57,400 00
Total	$505,201 34	$259,600 29	$764,801 63

PROJECTS UNDER CONSTRUCTION.

District.	Federal aid.	State aid.	Total aid.
Big Swan Drainage and Levee District	$168,720 00	$ 84,360 00	$253,080 00
Hartwell Drainage and Levee District	179,066 67	89,533 33	268,600 00
Keach Drainage and Levee District	281,280 00	140,640 00	421,920 00
Scott County Drainage and Levee District	140,400 00	70,200 00	210,600 00
Valley City Drainage and Levee District	154,133 33	77,066 67	231,200 00
Hillview Drainage and Levee District	140,400 00	70,200 00	210,600 00
Total	$1,064,000 00	$532,000 00	$1,596,000 00
Projects completed	505,201 34	259,600 29	764,801 63
Grand total	$1,569,201 34	$791,600 29	$2,360,801 63

Until recently Beardstown was considered by the Federal Government to be the upper limit on the Illinois River of backwater from the Mississippi, therefore, it was not possible to cooperate with the Federal Government in aiding certain other districts above this point which were very badly in need of this aid. The State, did however, cooperate with the districts themselves, and in so doing spent $97,989.71 from this appropriation.

The following is a summary showing the expenditures from the $1,000,000 appropriation for the Illinois River Valley passed by the Fifty-sixth General Assembly and the status of this appropriation including the reappropriation of the Fifty-seventh General Assembly, as of December 1, 1932:

Projects completed and under construction in cooperation with the Federal Government	$791,600.29
Projects completed in cooperation with Drainage Districts	97,989.71
Office and engineering expense	28,547.55
Total expended	$918,137.55
Unexpended balance	81,862.45
	$1,000,000.00

RIVERS OF ILLINOIS AND THEIR TRIBUTARIES OTHER THAN THE ILLINOIS RIVER.

The reappropriation of $373,419.34 for flood relief on the interior rivers of the State, has been spent largely in straightening some of these rivers where this work would result in great general benefit to the community, both through flood prevention and sanitation. Some of these funds have been used also to build levees and to cooperate with districts and cities in this work. This work was a continuation of work started during the previous year under the $600,000 appropriation of the Fifty-sixth General Assembly.

The following projects have been completed to December 1, 1932:

Project.	Cost.
Middle Fork of Saline River near Harrisburg	$153,992.99
North Fork of Saline River	27,852.57
Bay Creek	11,544.13
Cache River (upper)	23,573.91
Cairo Drainage District	36,000.00
Lima Lake Drainage and Levee District	5,353.02
Other districts	12,995.54
Total	$271,312.16

The following projects are under construction:

Project.	Estimated Cost.
Clear Creek Drainage and Levee District	$45,000.00
City of Cairo	9,818.00
Embarass River near Lawrenceville	46,750.00
Cache River (lower)	18,000.00
South Fork of Saline River	35,298.00
Upper Salt Fork	25,000.00
City of Shawneetown	41,433.33
Total	$221,299.33
Projects completed	271,312.16
Grand total	$492,611.49

The following is a summary showing the expenditures from the $600,000 appropriation passed by the Fifty-sixth General Assembly and the status of this appropriation including the reappropriation of the Fifty-seventh General Assembly, as of December 1, 1932:

Projects completed and under construction	$492,611.49
Projects for which tentative allotments have been made	30,282.00
Office and engineering expense	43,543.82
Total expended and allotted	$566,437.31
Available balance	33,562.69
	$600,000.00

REAPPROPRIATION OF UNEXPENDED FUNDS FROM EMERGENCY FLOOD RELIEF APPROPRIATION OF 1927.

The reappropriation of $16,552.30 of unexpended funds remaining from the $1,500,000 emergency flood relief appropriation of the Fifty-fifth General Assembly has been expended for flood relief projects of an emergency nature. On July 1, 1929, there existed an unexpended balance of the original $1,500,000 appropriation of $219,229.47. This balance was reappropriated by the Fifty-sixth General Assembly and expended for the following projects:

To complete projects started during the previous biennium	$ 57,007.78
City of East Peoria	105,183.61
McGee Creek Drainage and Levee District	24,000.00
Sny Island and Six Mile Drainage and Levee districts	11,333.33
Total	$197,614.72

The following is a summary showing expenditures under the reappropriation of $219,229.47, and the status of funds as of December 1, 1932:

Projects completed	$197,614.72
Projects under construction	5,000.00
Office and engineering expense	16,553.78
Total expended and obligated	$219,168.50
Unexpended balance	60.97
	$219,229.47

The reappropriation of $12,378.37 for repairs to the levees of the South Quincy and Indian Grave Drainage districts has been expended for the purposes intended.

SUPERVISION OF RIVERS AND LAKES.

W. G. POTTER, *Drainage Engineer.*

LAKE MICHIGAN.

In previous reports (12th, 13th, 14th) the phenomenal rise in lake level from January, 1926 to August, 1929 and the ensuing almost as phenomenal drop from August, 1929 to July, 1931 was described. During the current year (to July 1, 1932) and until November 1, 1932 this lowering of the lake level has continued. The customary summer rise in 1931 was only about 2 inches and the summer rise for 1932 was about 5 inches, followed by a drop of about 7 inches from July to October, 1932.

In consequence the lake in October, 1932 is at the lowest level on a record of 72 years, excepting the period from October, 1925 to April, 1926.

Because of this extreme low lake level, the storms of the past year have done comparatively little damage, and property owners have not felt the need of bulkheads and shore protection works and but little of such work has been done outside of Chicago.

In Chicago, the work of extending Lincoln Park northward by building bulkheads and filling has proceeded rapidly under the Lincoln Park Board. Also by the South Park Board and the Century of Progress, much filling has been done, shore protection installed, lagoons and islands built all in preparation for the 1933 Century of Progress Exposition.

EFFECT OF DRY WEATHER ON STREAMS.

The continued dry weather during the past year has had its effect in the lowering of the discharge of all rivers and streams especially in the northern part of the State. All of the Chain of Lakes region and all other lakes have been at an extremely low level. The Fox River, presumably at its all time low record in 1931 has been still lower in 1932. The Rock River also has been abnormally low. In consequence, many complaints have been received of pollution, water stagnation, wide expanses of bare mud beds of stream and lakes.

Another effect of the two or more years of drouth in the Chain of Lakes region is the enormous growth of weeds. In Fox Lake, Grass Lake and other lakes of this region, the weeds have practically covered the entire surface, thus rendering it almost impossible to traverse these lakes in a motor boat.

These lakes are the pleasure grounds of thousands of people, and because of this, this department obtained an appropriation of $1,000.00, and by the use of a weed cutter, cut channels through the weeds of Pistakee, Nippersink, Fox and Grass lakes and also through the connecting channels into Lake Marie and Channel Lake. These channels through the weeds have been much appreciated by the residents of the region.

Another trouble caused by the tremendous growth of weeds is the accumulation along the shore of a very unsightly and obnoxious scum from the decaying weeds. It is to be hoped that this will disappear with the winter and with the hoped for increase in rainfall of the next year.

CONSTRUCTION WORK ON FOX RIVER.

In the fourteenth annual report, mention was made of the reconstruction of a levee above McHenry Dam caused by deterioration of the former levee. This work was completed in July, 1931.

Because of the low water and of the silting up of the channel below McHenry Dam, thus rendering navigation practically impossible for a motorboat, and upon petitioned request of the resident property owners, an appropriation of $25,000.00 was made in 1929, by the Legislature for improvement of the channel between McHenry and Burton's Bridge.

During the last spring months, soundings were taken between the McHenry Dam and Burton's Bridge upon which an estimate was made and bids were called for. The contract was let to Mr. Julius Keg of McHenry.

The improvement planned was to excavate a channel not less than 4 feet deep, 50 feet wide on the bottom with 1 to 1 slope, the depth based on the extreme low water of 1931, the length being about 2½ miles. Also with this contract was the removal of a line of rock shoals just below Burton's Bridge, said shoals being remnants of piers of a bridge abandoned years ago, and the reinforcing of about 500 feet of levee above the dam which had been partly eroded and partly destroyed by muskrats and other animals.

This contract was completed in October, 1932 at a cost of $22,780.98.

On the Fox River below the lake region, the low stage of water has also been very noticeable. This and the continued practice of the water power users of drawing down the water above each dam to the extreme limit of power developing has caused much complaint from cities and property owners.

The result of this use of the water for power is that above each dam so used, the pool level is drawn down until nothing but a thread of water remains and vast widths of mud beds covered by debris are exposed. Below these dams the same conditions arise when the power is finally all developed and shut off to allow the pool to rise again. No water reaches the river below the dam at this time. The result of power development by continuing the use of water below the crest height of the dam will always cause complaint and obnoxious conditions, both above and below the dam, during times of low flow and should be prevented by more rigid laws and their enforcement.

RIVER IMPROVEMENTS.

Both on the Fox and the Rock rivers, many improvements by property owners have been continued in spite of the financial depression, although numerous others have been delayed or postponed. These improvements, all of which join in making the river and lake region both more sightly and more valuable to the State, consist of shore walls, deepening and cleaning the stream or lake bed, filling inside the walls, excavating boat channels into private property, etc., all of which are paid for by private owners and done under permit from this department.

LAKE ELIZABETH.

Lake Elizabeth and Mary Lake—called the "Twin Lakes"—are located mostly in Wisconsin with the south end of Lake Elizabeth lying in Illinois. The outlet stream is also in Illinois and is a branch of Nippersink Creek which outlets into the Chain of Lakes.

In former days, the level of Lake Elizabeth was maintained by a low concrete dam across this creek. By some unknown parties at some time in the past, this dam was dynamited and its usefulness destroyed.

During the past year, because of the low water conditions, the resident owners in Wisconsin desired to restore the lake level by having this dam replaced. Consequently, in their behalf, the Public Service Commission of Wisconsin, wrote this department proposing a joint hearing in regard to the matter. In reply to this, it was stated that this department has no authority under the statutes to order the construction of a dam on private property against the will of the owner, but that we would endeavor to get the owner to make an application for permit to construct the dam, and that on receipt of this, we would be glad to co-operate in a joint hearing. The owner, however, has never applied for the permit. Recently, a delegation of Wisconsin owners interviewed this office and stated that an agreement had been made with the owner of the dam site to the effect that the dam would be reconstructed without expense to him. This office then agreed to issue a temporary permit for the dam to be rebuilt at its original height pending a later joint hearing as to the final height and lake level, upon receipt of a copy of the agreement. Up to date this has not reached this office and the question remains in status quo.

INSPECTORS AND INSPECTIONS.

The same number of inspectors have been engaged in their duties of watching for and stopping encroachments and pollution on the various rivers in the northern part of the State as in the last report. Three inspectors have been employed on the Fox River, one each on the Chicago, DesPlaines, Rock, Calumet and Illinois, one on the Illinois and Michigan Canal and two on Lake Michigan, with one chief investigator, whose report will follow.

Semi-monthly reports are received from each inspector detailing his activities and inspections.

Because of the much greater development of the rivers in the northern part of the State for power, manufacturing and other uses, our inspection duties have been confined to these streams; but the time is approaching when it will be necessary to also include regular inspections on some of our other streams.

CHICAGO RIVER.

The usual number of permits for new docks and for dock repairs have been issued, all of which have been subject to inspection under this department. In many cases, complaints have been received of encroachments as further described in the report of our chief investigator.

OGDEN DITCH.

For many years the West Fork of the South Branch, commonly known as the Ogden Ditch, has been the source of complaints as a nuisance, a breeding place for mosquitoes and a menace to health. This has especially been true of the western end of this ditch. From Cicero Avenue (Forty-eighth Avenue) to the part already filled by the Sanitary District near Fifty-sixth Avenue, the stream has been practically stagnant at all times except in case of heavy rain. Numerous petitions from property owners and nearby residents were received to allow this part of the stream to be filled. Permission was granted on condition that the drainage water reaching the stream be taken care of, and this part of Ogden Ditch, a mile in length, has been filled. East of Cicero Avenue several large sewers enter the stream and cause considerable current, thus estopping further filling of Ogden Ditch until those sewers and drains are disposed of otherwise.

AIRPLANE SURVEY AND MAP OF THE CHAIN OF LAKES REGION.

With the great development of the Chain of Lakes Region of the Fox River, which has taken place in the last decade, it has been more desirable each year that a reliable and accurate map be made showing the lakes and their shore lines, the islands, and the swamp lands, together with roads and highways as they actually are today.

No map was in existence showing these details accurately, and to obtain one in the usual manner by survey would be almost impossible and extremely expensive.

In accordance with the great demand for a map of this kind, it was decided that the best plan was to have an airplane survey made. For this purpose an allotment was sought and received, and a survey was made by the Chicago Aerial Survey Company. From their photograph a mosaic map about 3½ feet wide by 6 feet high was made covering the territory between the Fox River and Long Lake in an east and west direction, and from south of Pistakee and Wooster Lakes to the Wisconson line.

Using this mosaic as a base, this department has constructed a map which shows in detail the entire Chain of Lakes region, and has had reduced scale maps lithographed for free public distribution.

In the short time since these were issued, many requests have been received for copies, and over 500 copies have already been distributed to property owners, schools, other State departments, etc.

ROUTINE WORK.

Numerous investigations have been made in various parts of the State in regard to complaints or in regard to dams, drainage, or other improvements for which permits had been requested.

Two trips were made to Lawrenceville and Danville as a witness in a court case against the State in regard to change of channel of the Embarrass River at Lawrenceville.

An increasing amount of correspondence is necessary each year in regard to permits, complaints and requests for information, which has been promptly cared for.

The following formal permits were issued during the year ending June 30, 1932:

Bridges (State Division of Highways)	31
Bridges (County Division of Highways)	12
Other bridges and pier protections	17
Piers in Fox River or Lake Region	16
Shore walls in Fox River or Lake Region	8
Shore walls in Lake Michigan	3
Dock repairs, Chicago River (3,507 lin. ft.)	23
New dock, Chicago River (1,401 lin. ft.)	8
New dock, Calumet River (2,851 lin. ft.)	2
Cables and transmission lines across rivers	16
Dredging	23
Sewers or outlets	5
Water intakes	4
Gas mains	4
Drainage district	1
Miscellaneous	12
Total formal permits	185
On weekly permit list to Division of Highways	623
Total permits issued	808

The total of permits during the previous year was 668 and for 1930 the total was 525.

The investigation of pollution and sanitation problems will be included in the report of Mr. M. C. Sjoblom, Sanitary Engineer.

INVESTIGATION OF COMPLAINTS AND INSPECTIONS.

By J. E. Fulton, *Chief Investigator.*

All complaints made to this department relative to pollution of streams, obstructions to channels of rivers and requests for permits for construction work, new bridges, piers, docks and landings have been investigated and inspected. Where violations were found, evidence and all data necessary have been prepared, kodak snapshot pictures made for permanent record and use of the department in preparing any action necessary to protect the interest of the public, the parties interested and the State.

Attempted dumping and filling in of the Illinois & Michigan Canal and along the canal reserves by the city and several trucking contractors, without proper permit, have been prevented by State inspectors and at times by aid of police.

Complaints were made relative to mosquito breeding points and the nuisances were eliminated along the Illinois & Michigan Canal and Damen Avenue west to Crawford Avenue.

Rendering plants along the South Fork of the Chicago River have been prevented from further dumping of their refuse or debris in violation of State law and compelled to clean up same along river bank. Factories and packing plants on this branch of the Chicago River were prevented from dumping and piling of debris or plant waste on banks where heavy rain or snow would wash same into river.

Excessive sewage and waste from tanneries, factories and houseboats along North Branch of Chicago River was investigated and conditions improved.

Debris and wastes along DesPlaines River channel and banks complained of by residents during low water period and efforts were made to clean up and prevent all dumping. The County Commissioners Forest

Preserve employees have made some progress in a general clean-up along the river and a plan is now under way to use labor paid from the Emergency Relief fund.

Several contractors have been requested to remove from channels of streams, piling and other timbers used in construction on new bridges and not removed on completion of construction. All have complied except at two or three points—railroad bridges which were constructed several years ago and old piling not removed. Efforts are being made to compel removal. New bridges over the Calumet, Little Calumet and DesPlaines rivers, during construction and after their completion, inspected by the writer and investigation made to see that all channels are left open and clear and free from timber, piling and all obstruction.

The writer of this article finds after many investigations that the public is willing at all times to cooperate with State officials of this department and appreciates fully the department's efforts to protect their interests and the interest of the State in preventing all violations of the law and do not hesitate to apply for permits, once they become familiar with State requirements, wherever a permit is necessary to carry out their plans.

The use of a kodak camera to make snap shot pictures where necessary and the rapid transportation by automobile to points of complaints and investigation are very valuable assistance in securing data and evidence in all cases quickly, resulting in prompt and effective action by the department.

An investigation of traffic conditions, congestion and accidents on Chicago loop elevated stairways and Illinois Central Railway subways was made during May and reported to Chief Engineer for use in design of the stairways of bridges under construction at Joliet, Illinois.

STREAM POLLUTION AND SANITATION.

By M. C. Sjoblom, *Sanitary Engineer.*

During the past year visits of inspection have been made to a large number of places, principally in the northern portion of the State. The majority of these visits have been made as a result of complaints to this department, alleging nuisance or damage from pollution. A number of visits were also made at the request of the State Sanitary Water Board on cases in the general vicinity of Chicago. By this cooperation between State departments it was unnecessary to have inspectors sent the entire distance from Springfield.

Owing to the unfortunate financial situation existing during the past year or two, the work of sewage disposal plant construction has been all but discontinued. Such works could be carried out to advantage at this time as it would afford employment for many now idle, and construction costs have been reduced to a minimum. However, it has been found all but impossible to finance such projects, with the result that many localities suffering from sewage nuisances still have received no appreciable relief. Many inspections have been made to help in the problem of minimizing these foul conditions until financing of the necessary remedial work is possible.

As a part of the work a visit was made to Anna, Illinois, to study the sewage disposal needs at the State institution. No final action has been taken in the matter but it is thought that the sewage disposal problem here may be best met by joining with the city of Anna and constructing a plant to serve both the institution and the city. By so doing a considerable saving can be realized in the installation cost and also in the cost of operation.

Part of the work being done by this department at Joliet in connection with the deep waterway covers the changing of parts of the existing sewerage systems. This is necessary, for with the raising of the pool level through the city, some of the old sewers will not function properly. Studies were made during the past year looking to the changes necessary and assistance given in the final plans adopted.

As a result of complaints, inspections were made to investigate the killing of fish in two streams. Causes of the damage were ascertained and action taken to prevent recurrence of the trouble. Inspections were also made at various points along Fox River as a result of complaints alleging that fishways were of little or no value during drier periods of the year. As a result of these investigations it is safe to state that fishways at a number of points in Fox River are useless except during flood stages. This is due in several cases to the placing of the upper end of the fishway on the crest of the spillway. For weeks at a time no flow is permitted to pass over the dam, the water being by-passed through the waterwheels, and no water enters the fishway. In order to be operative at all times these fishways should be depressed so that water would be passing through them at all stages of the stream.

September 30, 1932.

ILLINOIS AND MICHIGAN CANAL REPORT.

By John A. Walter, *Auditor and Collector.*

SUMMARY OF SPECIAL CANAL FUND.

July 1, 1931 to June 30, 1932.

Balance on hand July 1, 1931		$91,984.04
Receipts as below	$32,079.58	
Expenditures as below	26,241.34	
Receipts over expenditures		5,838.24
Balance on hand July 1, 1932		$97,822.28

RECEIPTS.

Ninety foot strip, lots and bridge rentals	$15,057.33
Water power rentals	11,892.24
Boat house rentals	10.00
Water pipe rentals and miscellaneous	4,478.75
Ice leases	400.00
Certified copies	10.00
Tolls and lockages	223.76
Level license	7.50
Total	$32,079.58

EXPENDITURES.

Appropriation for I. & M. Canal	$26,241.34
Appropriation for Illinois Rivers	25,382.78

ILLINOIS AND MICHIGAN CANAL EXPENDITURES.

Salary locktenders and officers	$ 9,000.00
Labor pay rolls	12,025.65
Repairs	2,019.79
Operation and maintenance	2,941.61
Permanent improvements	254.29
Total	$26,241.34

MAINTENANCE NAVIGATION ILLINOIS RIVERS EXPENDITURES.

Salary locktenders, watchman and officers	$15,025.00
Labor pay rolls	5,441.80
Repairs	1,308.60
Equipment	1.50
Operation and maintenance	3,595.68
Permanent improvements	10.20
Total	$25,382.78

NUMBER OF BOATS RUNNING, TOLLS AND LOCKAGE COLLECTED ON THE ILLINOIS AND MICHIGAN CANAL.

	Joliet.	LaSalle.	Total.
Tolls	$114.81	$107.45	$222.26
Boats cleared	45	53	98

SUMMARY OF ACTIVITIES.

Notwithstanding unusual expenditures account of washed out towpath and banks, collapsed culvert, reduction in collection of rental due to economic conditions, the earned income the past year exceeded the expenditures by $5,838.24, and there is now $85,518.00 more in the special canal fund than when the Division of Waterways assumed charge on July 1, 1917.

Nine new leases for strips of the canal reserve were made, including lease for gas main at Ottawa; there is pending application of the Illinois Power and Light Corporation for modification of their land and water pipe lease at LaSalle; five leases of canal reserve have expired, including lease with village of Spring Forest for fire station, and the station has been removed from canal land and two certified copies of land sale book furnished.

Ice privilege lease of Ottawa renewed with reduced yardage and rental. Account of mild weather there was no ice formed in the canal at Ottawa suitable for harvesting and no rental was collected for the 1931-1932 season on said lease.

Lease for the public landing and for three lots in block 38 at Ottawa expired, and the property has been rented from month to month until business conditions improve so that a term lease can be made.

Joint recount of Public Service Company poles on canal land from Chicago to Joliet shows 1,252 poles now on the canal reserve and rent for the privilege was proportionately reduced.

Illinois Power & Light Corporation water power and land lease at Ottawa expired and as there is no water power that can be developed on the Ottawa lateral canal a new lease for the land only has been made with the corporation.

New lease with the city of Ottawa has been entered into for portions of canal lands adjacent to the lateral canal and rental on same to be effective from July 1, 1932.

Rental income for the past year has been considerably reduced due to unemployment conditions and the suspending of the operations of many plants located along the canal, and difficulty is experienced in making prompt collections.

Permit issued by the department to the city of Ottawa to fill the lateral canal and hydraulic basin in the city of Ottawa within the lines of certain streets and said fill has been completed.

Special attention been given to prevent encroachments on the canal reserve and dumping of debris and refuse in the canal, barricades were erected on both sides of Kedzie Avenue Bridge and one at Hoyne Avenue, and "no trespassing" signs erected at different points along the canal.

A barricade guard wire fence 542 feet in length was erected on both sides of the canal bridge at Ashland Avenue.

Survey made of damage to crops as result of collapse of culvert west of Seneca on June 22, 1931.

Three additional test plates of paint and steel were immersed in canal below Jackson Street Locks and with those previously immersed are under observation and examined from time to time and record kept of such examinations to show the condition of each plate.

Locktender Funk died on July 14, 1931 and Dan Swift was temporarily appointed to the position and on June 11, 1932 Locktender Fessler died and his widow was temporarily appointed his successor.

The regular canal crew assisted in overhauling the equipment and machinery of the waterway dredge fleet at Dresden and are assisting in keeping the flooring and approaches thereto of the temporary bridge at Van Buren Street in condition for traffic.

During the past year crawfish and muskrats weakened the towpath in many places and were the principal cause of washed out and caved in banks.

Installation of 130 feet of 36 inch metal culvert pipe which took the place of the collapsed culvert under canal one-half mile west of Seneca was completed on July 11th, cost of all materials and hauling was $808.26, the labor performed by the regular canal crew.

On July 22nd a cave-in of towpath west of Channahon, near the old Kankakee feeder occurred, upon telegraphic authorization from the director repair of same was started at once, 400 lineal feet of steel sheet piling used and a timber cribbing constructed which was filled with rock and earth fill, work completed and level filled on July 27th, cost was $982.00.

New five-room locktender house at Lock 13 was constructed to take place of the one destroyed by prairie fire, cost of materials was $1,025.90 and all labor was done by the regular canal carpenters and helpers.

A new concrete west wing wall of the culvert at Gum Creek (Marseilles) constructed at cost of $247.05.

In February, 1932, the towpath-roadway from Utica to Lock 13, a distance of 1.9 miles, was cleared of underbrush and trees, gravel placed in the low spots, then leveled off and graded, road put in a usable condition at cost of $262.50, arrangements made to have the roadway graded from time to time after heavy rains.

Repaired towpath east of Birds Bridge that had been damaged by crawfish and muskrats at cost of $154.80.

During the warm weather the canal between Damen and Western avenues was sprayed with oil from time to time to prevent mosquito breeding.

Canada thistles on the canal reserve in the townships through which the canal passes were destroyed, in some instances by the thistle commissioners and in others by the regular canal crew.

The high private owned bridge across the canal in east part of LaSalle collapsed on July 28th, fell in canal and blocked the channel, the debris was promptly removed and channel cleared.

Additional openings made in Ottawa aqueduct over the Fox River to take care of any flood waters.

The steamboat basin at LaSalle was dredged, the channel deepened and a concrete wall constructed east of lock 15.

The dredge outfit removed bars and fills and deepened the channel between Morris and LaSalle and removed fill west of the new bridge on Chestnut Street, Ottawa.

In July there was a cloud burst near Utica which caused a number of bars and fills in the canal between lock 12 and Utica, these were promptly removed by the State dredge boat.

Constructed foot bridge across lock 8 and repaired the locktender house. Rebuilt the concrete walls and apron of waste weir east of lock 6.

Rebuilt four waste gates and installed roofs on three locktender and two watchman houses.

Reconstructed the lock gates at lock 15 by installing new balance beams, girders, splicing quoin and mitre posts.

Navigation closed for the 1931 season on November 25, 1931 and was opened for the 1932 season on June 1, 1932, for boats with draft not exceeding 3½ feet.

Ten United States Coast Guard boats, each 36 feet long and 9 foot beam, went through the canal in July, 1931, from Joliet to LaSalle and on June 2, 1932 a navy reserve boat, 50 feet long and 13 foot beam, left Joliet at 6:30 a. m. and went through canal and locked into Illinois River at LaSalle at 6:00 p. m., June 3rd.

Thirty steel pontoons, for use in the river dredging near Dresden, came through canal from LaSalle to near the old Kankakee feeder.

ILLINOIS WATERWAY LANDS.

Receipts from rental of Illinois Waterway lands from July 1, 1931 to June 30, 1932, amounted to $2,109.96.

Most of the lands were leased on shares and decreased rentals due to low prices of grain and to the fact that all of the best farming lands were sold in 1931, and from which no rental was received.

Due to construction work by the Federal government and raising of pool levels none of the leases were renewed for the year 1932 and it is not expected there will be any further rental income.

Canada thistles and noxious weeds on waterway lands not yet sold in Fall River and Manlius townships, LaSalle County, were cut and destroyed as required by State law, at labor cost of $209.66.

I have assisted the Oliver Realty Company in the sale of waterway lands which were available for sale.

PUBLICATIONS FOR DISTRIBUTION BY THE DIVISION OF WATERWAYS.

Issued by the Rivers and Lakes Commission of Illinois, 1911–1916.

BULLETINS.

No. 1. The Conservation of Water Power in the DesPlaines and Illinois Rivers and the Improvements of these Rivers for Navigation. 1911.

No. 2. Prospectus of a project for a Deep Waterway and conservation of natural resources of the State of Illinois, prepared by Lyman E. Cooley. 1911.

No. 3. Uses of the Great Lakes. 1912.

No. 4.* Land Drainage in Illinois, by Robert Isham Randolph. 1913.

No. 5. A compilation of money spent by the Government on various Harbors, Rivers and Canals, and the riparian property holders benefited. 1912.

No. 6. Argument on behalf of the State of Illinois supporting the prayer of the Sanitary District of Chicago for a permit to take 10,000 cubic feet of water per second from Lake Michigan, by Isham Randolph. 1912.

No. 7.* The 1912 Flood on the Lower Mississippi, by A. L. Dabney, Consulting Engineer, and "The 1912 Flood in the Ohio and Mississippi Rivers," by H. C. Frankenfeld. 1912.

No. 8. Proceedings of the organization meeting of the Association of the Mississippi Valley States for river control. 1912.

No. 9. The Illinois Water Power Waterway. 1912.

No. 10. The Illinois Waterway—a Guide for Navigators from Lake Michigan to the Mississippi River via the Chicago Sanitary and Ship Canal, the Illinois and Michigan Canal and the Illinois River. Also an Alternate Route via the Illinois and Mississippi Canal. Fifth edition. 1928.

No. 11.* European Harbor Development, by Robert R. McCormick. 1912.

No. 12.* Common Sense applied to the Inland Waterway Problem, by Robert R. McCormick. 1912.

No. 13. The Illinois Waterway, a Review, by Isham Randolph. 1912.

No. 14. Water Resources of Illinois—a cooperative report prepared by Rivers and Lakes Commission and A. H. Horton, District Engineer of the United States Geological Survey. 1914.

No. 15.* The Illinois Waterway—a project for a waterway of eight feet minimum depth between Lockport and Utica and available for immediate construction. 1914.

No. 16.* Stream Pollution and Sewage Disposal in Illinois with Reference to Public Policy and Legislation, by LeRoy K. Sherman. 1915.

No. 17.* Report of Survey and Investigation of LaMoine River, with Reference to Flood Control and Navigation.

No. 18.* Flood Control for Pecatonica River. 1916.

No. 19.* Projects for a Navigable Waterway from Southern Illinois Coal Fields to Mississippi River. 1917.

No. 20.* The Illinois Waterway Report, with plans and estimates of cost of a deep waterway from Lockport to Utica by way of the DesPlaines and Illinois Rivers. Internal Improvement Commission. 1909.

No. 21.* Surface Water Supply of Illinois. Internal Improvement Commission. 1908–1910.

No. 22. Report (and Plans*) for reclamation of lands subject to overflow in the Kaskaskia River Valley, Illinois. 1910–1911. Postage, 16 cents.

No. 23. Report from the prevention of overflow of the Little Wabash and Skillet Fork Rivers. 1911. Postage, 16 cents.

No. 24. The Illinois River and its Bottom Lands, by Alvord and Burdick. 1915. Second edition, 1919.

No. 24½. *Report, map and profile of Fox River. 1915.

Annual reports of Rivers and Lakes Commission. 1912,* 1913, 1914, 1915,* 1916.*

ISSUED BY THE

DIVISION OF WATERWAYS.

Successor to Rivers and Lakes Commission.

*First Annual Report. 1917–18.

Second, Third, Fourth, Fifth, Sixth, Seventh, Eighth, Ninth, Tenth, Eleventh, Twelfth, Thirteenth, Fourteenth and Fifteenth Annual Reports. 1918–32 inclusive.

Saline River Report. 1920. (See Third Annual Report.)

Inland Waterways and Transportation Costs, by M. G. Barnes. 1920.

No. 25. Big Muddy River Report. 1922. (Also in Fifth Annual Report.)

No. 25½. Floods in Illinois. 1922. Causes, results and remedies. (Also in Fifth Annual Report.)

Pecatonica River Report. 1924. (See Seventh Annual Report.)

Report of the Interstate Harbor Commission of Illinois and Indiana on Harbor and Terminal Development at the State line between Illinois and Indiana, and in Chicago Industrial District. 1922.

No. 26. Calumet Lake and Chicago-Nickel Plate Agreement. 1926.

No. 27. Laws of Illinois relating to Waterways. 1926.

No. 28. National Aspect of Lakes-to-Gulf Waterway — Diversion of Waters from Lake Michigan—Boundary Waters, Treaty, etc. 1926.

No. 29. "Flood Control Report." 1929. An engineering study of the flood situation in Illinois, prepared under the direction of Wm. F. Mulvihill, Supervisor of Illinois Waterway Construction, and L. D. Cornish, Chief Engineer.

Map of Chain of Lakes Region, McHenry and Lake Counties. 1932.

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* On file in office of Division of Waterways, Chicago. Supply for distribution exhausted.

For any of the foregoing publications, address Division of Waterways, 220 South State Street, Chicago, Illinois.

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SIXTEENTH ANNUAL REPORT

OF

DIVISION OF WATERWAYS

OF

THE DEPARTMENT OF PURCHASES AND CONSTRUCTION

July 1, 1932

TO

June 30, 1933

AUG. 26TH 1818

[Printed by authority of the State of Illinois.]

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1932

SIXTEENTH ANNUAL REPORT

OF

DIVISION OF WATERWAYS

OF

THE DEPARTMENT OF PURCHASES AND CONSTRUCTION

July 1, 1932

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NATURAL HISTORY SURVEY
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ADMINISTRATIVE OFFICERS OF THE DEPARTMENT OF PURCHASES AND CONSTRUCTION, DIVISION OF WATERWAYS, FOR THE FISCAL YEAR JULY 1, 1932 TO JUNE 30, 1933.

Louis L. Emmerson, Governor, to January 8, 1933.
Henry Horner, Governor, from January 9, 1933.
Henry H. Kohn, Director.
Thos. Williamson, Asst. Director. Resigned March 10, 1933.
L. G. Coonrod, Asst. Director. Appointed April 6, 1933.
Benjamin H. Miller, Supervisor. Resigned January 18, 1933.

DIVISION OF WATERWAYS.

L. D. Cornish, Chief Engineer.
Walter M. Smith, Assistant Chief Engineer.

BUREAU CHIEFS.

Gunni Jeppesen, Bridge Engineer.
W. G. Potter, Drainage Engineer.
C. M. Briggs, Terminal Engineer.
L. C. Craig, Division Engineer Flood Prevention.
J. H. Walker, Division Engineer of Construction.
John A. Walter, Auditor, I. & M. Canal.

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WATERWAYS.

L. D. Cornish, *Chief Engineer and Acting Head of Division.*

This is the sixteenth annual report of the Division of Waterways but covers in outline the work of the division from December 1, 1932 until June 30, 1933, as the period from July 1, to December 1, 1932, was covered in the fifteenth annual report.

During the month of December, 1932 the work continued under the administration of Governor L. L. Emmerson, whose term expired in January, 1933, when he was succeeded by Governor Henry Horner.

Judge Benjamin H. Miller was supervisor until the middle of January, 1933, when he resigned, and the vacancy was not filled.

The General Assembly enacted a law abolishing the Department of Purchases and Construction at the end of the fiscal year and directing the Department of Public Works and Buildings to take over most of its functions, including the Division of Waterways. Mr. Henry H. Kohn continued as director until the order took effect.

JURISDICTION OF THE DIVISION OF WATERWAYS.

The Division of Waterways being a successor to the Rivers and Lakes Commission, all powers, duties and jurisdiction of the said commission became vested by law in the Division of Waterways, especially as to the jurisdiction over all rivers and lakes of the State of Illinois, to prevent pollution thereof or encroachments thereon. The powers and duties of the Illinois Waterway Commission with reference to the construction, operation and maintenance of the Illinois Waterway and for development and utilization of the power thereof; and also the powers of the Illinois and Michigan Canal Commissioners for the control and management of the Illinois and Michigan Canal, the maintenance of the navigability thereof and the sale and lease of the canal lands were vested by law in the Division of Waterways.

ILLINOIS WATERWAY BRIDGES.

The construction of the highway bridges across the Illinois Waterway which had to be replaced to make the waterway navigable, was continued as required by the U. S. Government in taking over the completion of the waterway.

Jackson, Jefferson and Cass Street bridges in Joliet and Brandon Road Bridge just south of Joliet were completed.

Marseilles Canal, Smith's Highway and McDonough Street, Joliet, bridges were nearly completed.

Considerable work was done on Marseilles River Bridge and Hilliard Bridge, Ottawa.

The two other bridges over the Illinois Waterway, one at Seneca and the other at Morris, are being built by the Highway Division. The one at Seneca has been completed but the contract for the Morris Bridge has not yet been advertised, although its design is completed.

Upon the completion of Jackson, Jefferson and Cass Street bridges the temporary bridge at Van Buren Street, Joliet, was removed and a contract was let for the removal of Ruby Street Bridge. This bridge was removed in the spring of 1933 and it was hoped to proceed immediately with construction of the new bridge, but on account of delay of the U. S. Engineers in deciding upon the exact location of the channel and the inability to obtain the right-of-way, the completion of the design and the advertising of the contract was delayed.

The Illinois Waterway was opened to traffic in April, 1933 to a limited extent. The fixed bridges remain in use at Morris and Ottawa, rendering it impossible for crafts requiring a very great vertical clearance to navigate the canal.

ILLINOIS AND MICHIGAN CANAL.

Since the opening of the Illinois Waterway, navigation has practically ceased on the Illinois and Michigan Canal, and it is earnestly hoped that the National Congress at the coming session will enact legislation legalizing the abandonment of the canal as a navigable waterway, and granting title to the right-of-way to the State of Illinois to be used for public purposes as the State may see fit.

DAMEN AVENUE BARGE CANAL TERMINAL.

The Fifty-seventh General Assembly enacted legislation providing for construction of the Damen Avenue Barge Canal Terminal with the $200,000.00 fund provided for the purpose by the Atchison, Topeka & Santa Fe Railway in part payment for certain lands in litigation near the site of the proposed terminal, title to which was claimed by the State and which were not suitable for terminal purposes but were valuable for right-of-way to the railroad which transferred to the State a suitable terminal site in addition.

Work was continued on design of the terminal and the question of best method of procedure was taken up with the railroads interested in the terminal and with officials of the Federal Barge Lines.

A more complete account of the various branches of the work of the division will be found in the appended reports of the various engineers in charge of the different branches.

ANNUAL REPORT OF ENGINEERING ACTIVITIES.

By Walter M. Smith, *D. Sc., Assistant Chief Engineer.*

Since the publication of the Fifteenth Annual Report several of the bridges have been practically completed but the final payments in some cases have not been made, although the bridges have been thrown open to traffic.

CONTRACT B-2—SUBSTRUCTURE MARSEILLES CANAL BRIDGE.

Paving of the approach at the south end of this bridge was completed in the spring of 1933 after having allowed the fill to settle during the winter.

CONTRACT B-3—SUPERSTRUCTURE MARSEILLES CANAL BRIDGE.

This bridge was finished except for paving of approaches and painting of superstructure, and thrown open to traffic about February 1, 1933.

CONTRACT B-4—SUPERSTRUCTURES JACKSON AND JEFFERSON STREET BRIDGES.

This contract was finally completed about the end of March, 1933, but both bridges were in operation for several months before that time. The delay in the completion of the contract was due to the subcontractor furnishing bolts for the machinery of an inferior grade of steel and it required considerable time to compel them to furnish and place bolts of the material called for in the specifications.

CONTRACT B-5—BRANDON ROAD BRIDGE.

This contract was finished and the bridge thrown open to traffic in August, 1932, but the same subcontractor furnished the machinery as at Jackson and Jefferson Street bridges in Contract B-4 and furnished bolts of the same inferior material as at those two bridges. The bolts were finally replaced by bolts of the proper material and the contract completed.

CONTRACT B-8—SUPERSTRUCTURE SMITH'S HIGHWAY BRIDGE.

Work on this contract was much delayed due to various causes, one of the principal ones being the raising of the water level in the pool when the bridge was about half completed. This made it much more difficult to bring the steel to the site as it had to be hauled over new roads.

On connecting up the superstructure of the bridge to the bolts in the south abutment it was found that the abutment had tipped about 2½ inches toward the river. A heavy concrete sill was then constructed on solid rock some distance from the toe of the abutment and flying buttresses constructed between this sill and the three piers of the abutment.

The contract was about 90 per cent completed at the end of the year.

CONTRACT B-9—CASS STREET BRIDGE SUPERSTRUCTURE.

Final completion of this contract was greatly delayed by the furnishing of machinery bolts of inferior material, the subcontractor for the machinery on this bridge being the same as on Jackson and Jefferson Street bridges. Bolts of the proper material were finally furnished and placed and the contract finished.

HILLIARD BRIDGE—OTTAWA.

This bridge was first designed as a simple through truss bridge with a horizontal clearance of 350 feet between the piers of the main span, and proposals were asked on this design.

One of the bidders submitted a plan for a cantilever bridge with a clear horizontal opening of 500 feet between the main piers and submitted a bid on this design. The bid submitted was considerably higher than for the truss design bridge upon which bids were asked and of course could not be accepted.

Due to peculiar conditions at this site the matter was thoroughly discussed on the question of whether it would not be worth the extra cost to adopt this design and reject all bids and readvertise on the revised plans. The reason for this discussion was as follows:

The Fox River empties into the Illinois River just upstream from this bridge, almost at right angles to the course of the Illinois River and almost parallel to the axis of the bridge. This creates a very bad condition for tows passing up or downstream through the space between the main piers of the bridge. As the Fox River is narrow and the slopes quite steep, the rainfall on this watershed reaches the river very quickly, therefore with heavy rainfall over the watershed of both the Fox and Illinois rivers, the water of the Fox River will reach its mouth at the junction with the Illinois River much quicker than the water from the upper Illinois and will at times cause a very severe cross current underneath this bridge. A tow going in either direction when the bow strikes this cross current would be thrown very strongly to the south and the only way for rectifying the course of the tow is to swing the stern around in a broad arch, therefore making a dangerous possibility of the stern of the tow striking the pier on the south side of the river with the clearance between piers being only 350 feet.

This condition made it very desirable to have the 500 foot clearance if it could be obtained at not too great an expense.

Since the beginning of work on the plans of the Hilliard Bridge it had been found that the bridges were costing much less than had been anticipated on account of the depression, and the Division of Waterways could afford the small additional expense required for a cantilever bridge. Recommendation was therefore made to the Director by the Chief Engineer of the Division of Waterways that the cantilever type be adopted, new plans prepared and new bids called for. The Director agreed to this and revised plans were prepared, bids called for and the contract let for a cantilever bridge in place of the simple through truss bridge.

CONTRACT B-10—SUBSTRUCTURE AND APPROACHES, HILLIARD BRIDGE, OTTAWA.

Very bad conditions were encountered at the north main pier of this bridge which delayed the completion of the contract several months. The date of completion called for was March 4, 1933, whereas it was only about 50 per cent completed at the end of the fiscal year.

CONTRACT B-11—SUPERSTRUCTURE HILLIARD BRIDGE, OTTAWA.

This contract was awarded to the low bidder, the Wisconsin Bridge & Iron Company of Milwaukee, Wisconsin, on November 11, 1932 and was required to be completed by August 8, 1933. However, on account of the difficulty with the construction of the north main pier under Contract B-10, the erection of the superstructure could not be started until June 1, 1933 and was only about 20 per cent completed by the end of the year.

CONTRACT B-12—SUBSTRUCTURE MC DONOUGH STREET BRIDGE.

Due to the injunction obtained by the city of Joliet the start of work on this contract was delayed for some time and the contract was not finished until about February 1, 1933 instead of a month earlier as called for in the contract.

CONTRACT B-13—JEFFERSON STREET BRIDGE APPROACHES.

The contract was finally completed.

CONTRACT B-14—CASS STREET BRIDGE APPROACHES.

Due to the necessity of putting a very deep fill in the east approach in the winter, some of which was frozen, it was decided to wait until the spring to finally grade and pave this approach.

The contract was finally completed in April, 1933.

CONTRACT B-15—SUPERSTRUCTURE MC DONOUGH STREET BRIDGE.

Work was started on erection of the superstructure early in April and the contract was about 60 per cent completed at the end of the fiscal year.

CONTRACT B-19—OPERATORS' HOUSES, JOLIET BRIDGES.

Operators' houses for Cass and Jefferson Street bridges were completed and the one for McDonough Street Bridge about 50 per cent completed. Only a moderate amount of material has been delivered for the one at Ruby Street Bridge.

CONTRACT B-20—SUPERSTRUCTURE ILLINOIS RIVER BRIDGE, MARSEILLES.

The subcontractors for the erection of this bridge were the same as at Smith's Bridge and due to the delay in completion of that bridge there was great delay in starting erection of this bridge and it was not more than half finished, although the time of completion originally called for was March 19, 1933.

CONTRACT B-23—REMOVAL OF TREAT'S ISLAND AND SMITH'S HIGHWAY BRIDGES.

This contract was completed by the removal of Smith's Highway Bridge in the latter part of February, 1933, by orders of the U. S. War Department. This was several months before the new Smith's Highway Bridge was finished and caused quite a hardship as it left no bridge across the Illinois or DesPlaines rivers for a distance of 20 miles.

CONTRACT B-22—REMOVAL OF RUBY STREET BRIDGE, JOLIET.

This contract was advertised in December and bids opened on January 13, 1933. A canvass of bids is appended. The contract was let to the lowest bidder, the Powers-Thompson Construction Company of Joliet, and carried out successfully in the time required.

On account of uncertainties in the exact location of the channel under this bridge and the exact location of the bridge itself, drawings of the new bridge were not completed.

CONTRACT B-22—REMOVAL OF RUBY STREET BRIDGE—JOLIET.

Canvass of Bids Received January 13, 1933.

Item No.	Item.	Unit.	Powers-Thompson Construction Co., 221 S. Chicago St., Joliet, Ill.		Great Lakes Dredge and Dock Co., 104 S. Michigan Ave., Chicago, Ill.		Seymour Construction Co., 19 S. LaSalle St., Chicago, Ill.		Joliet Bridge & Construction Co., 510 Morris Bldg., Joliet, Ill.	
			Price.	Amount.	Price.	Amount.	Price.	Amount.	Price.	Amount.
1	Removing and disposing of the superstructure and two piers	Lump sum	--------	$4,200 00	--------	$4,845 00	--------	$5,444 00	--------	$5,573 50

DAMEN AVENUE GRAIN ELEVATOR.

The grain elevator belonging to the State at the site of the proposed barge canal terminal was destroyed by fire on December 23, 1932. The Atchison, Topeka & Santa Fe Railroad Co. operating the elevator decided to rebuild the elevator under its contract with the State.

The substructure has been completed.

HYDRO-ELECTRIC PLANTS.

A license to construct the hydro-electric plants at Brandon Road, Dresden Island and Starved Rock dams was granted by the Federal Power Commission in December, 1932, but shortly afterwards the license was temporarily withdrawn and work was discontinued on the plans for the various plants.

BARGE CANAL TERMINAL, CHICAGO.

Work was begun and carried forward on the design of the proposed Damen Avenue Barge Canal Terminal, Chicago.

The proposed terminal is to be used for the transfer of freight from barges to railroad cars or trucks and vice versa, but is not intended for transfer of freight from barges to lake vessels or vice versa.

Plans for a terminal building at the inner end of the dock were about 75 per cent completed.

SUPERVISION OF RIVERS AND LAKES.

W. G. POTTER, *Drainage Engineer.*

LAKE MICHIGAN WATER LEVELS.

In the Fifteentn Ahnual Report mention was made of the low water cycle of Lake Michigan water levels. In July, 1929, the monthly mean water level was at its highest point since 1886, at elevation 582.4 above sea level. In July, 1932, the water level had lowered to 578.66 and the winter ebb brought it down to 577.60 during January, February and March, 1933.

This is a very remarkable drop of 4.8 feet and during those three months the water level lacked only three inches of being the lowest on the seventy-three year record of the U. S. Lakes Survey from which these figures are taken. From this low level the annual summer rise only brought the level up 1.14 feet to a stage of 578.75 in July, 1933.

This *high* stage of July, 1933 is still 1.57 feet below the average *low* water stage of the seventy-three year record and 2.69 feet below the average high water stage for the same period.

In consequence of this low stage, the shore line or water edge has receded from one hundred to over two hundred feet because of the flat slope of the beach. While this has caused the storm periods to have much less damage to shore walls, bluffs and lake side improvements and thus become less noticeable to the residents, it has caused considerable trouble in another way.

According to the opinion of the Attorney General, the limitation line between State property and riparian owners is "the normal water line in an undisturbed condition."

Many shore owners and residents, seeing a wide stretch of beach where a few years ago the water came up to and was washing away their bluff banks, are taking advantage of the low water to fence in considerable beach in front of them on the supposition that they have a right to all land out to the actual water line.

As a matter of fact, the "normal water" is over two feet higher than the high point of the current year and 3.27 higher than the lowest month of the year.

This difference of actual normal stage means, as stated above, a width of 100 to 200 feet of beach which should belong to the State.

Steps are now being taken to establish this normal line on the ground by carrying elevations from U. S. Bench marks to the shore in order to indicate to owners their limitation line.

WEATHER AND RAINFALL.

The weather throughout the State has been exceptional in some ways. Storms were not very severe until the month of May when very heavy rainfall occurred over nearly all of the State. Several levees along the Illinois River were broken and planted crops were demolished. The Illinois River at Beardstown rose to a point only about seven inches below the record stage of 1926. In the Embarrass and Wabash Valleys, the water was almost at the record 1913 stage.

View in Illinois River Valley, near Beardstown, showing high water of 1844, 1926 and 1933.

Crops in general were long in being replanted because of the high water, and, after the late planting, because of lack of rain, they were in poor condition and the signs point to a very poor yield. This, coming in addition to the great financial depression, has had a most disastrous effect on drainage districts and on individuals. Very few districts are consequently able to pay the interest on their bonds or to finance the repair of their broken levees.

In regard to the flood in May, the writer had an interesting incident at a point a few miles from Beardstown shortly after the high water. A very old tree was pointed out on which is still visible the cut made by an ancestor of the man showing it to me which indicated the high point of the 1844 flood. On the same tree a nail indicated the 1926 flood and the 1933 high point was about six inches below the 1926 point.

The interesting part of this is that the 1844 mark, supposed to be that of the greatest discharge of all the Illinois River floods, was about four feet lower than the 1926 mark. This shows conclusively the effect of levees on the river, as in 1844 there were none.

The picture on page 14 shows the three high water marks mentioned above.

FOX RIVER.

Improvements on Fox River and in the Chain of Lakes region were fewer this year than in previous years. During the summer and fall of 1932, Fox River was very low and many complaints were received because of the low water and the unsightly bottom exposed in many places.

Some of the Fox Valley towns, used the men on the relief roll very nicely, to improve the shore line and clean the stream of rocks and debris. St. Charles is especially to be recommended for the fine work done by the force under Mayor Langum in tearing down unsightly bill boards and buildings and in beautifying the river banks.

ILLINOIS RIVER FLOOD PROTECTION.

During the month of June the writer was requested to review the plans as proposed by the Drainage District Engineers and by Mr. L. C. Craig, Division Engineer of this Department, in regard to removal or improvement of the "bottle neck" in the Illinois River just below Beardstown.

From the Burlington Railroad bridge at Beardstown down to the lower end of the South Beardstown District, the river is greatly congested because of the levees being built too close together.

Between the levees of Big Prairie District and South Beardstown District, the distance is only from 1,100 to 1,200 feet and at no place in the nine mile length below the railroad bridge is the distance between levees up to the minimum width of 2,000 feet recommended by the U. S. Engineers.

By auto, motor boat and on foot, the condition of the levees, the proposed set-backs and the nature of the land required for set-backs were inspected and examined on both sides of the river.

As stated above, the greatest bottle neck is between the Big Prairie and South Beardstown levees. Big Prairie District is small in size—consisting only of 1,870 acres, part of which is unproductive land not taxed. The district is in extremely bad shape financially and the land could be procured as a publicly owned tract for very little money. It would be more valuable as a fish and game preserve than as farming land. By using this district as a storage basin for flood waters it would also have a very appreciable effect on the crest height of floods up to and even above Beardstown. If the State Department of Conservation does not desire it as a State Fish and Game Preserve, the property should be acquired by some hunting club for a private preserve.

For these reasons, and for the additional reason that agricultural lands throughout the country are going to waste because of over production of crops, the opinion of the writer was that Big Prairie District should be thrown back to its original condition as land subject to overflow.

Above this district the writer recommended that the levees be set back far enough to allow 2,000 feet as a minimum width between levees. By carrying out these recommendations the crest height of floods at Beardstown would be reduced about 14 inches and its effect would be felt in diminishing amount up the river as far as Peoria.

This report was approved by the Chief Engineer and was recommended for adoption.

CHICAGO RUBBISH IN ILLINOIS AND MICHIGAN CANAL.

For many years the Division of Waterways has resisted all efforts to fill the Illinois and Michigan Canal in the limits of the city of Chicago whenever the sporadic attempts were made to deposit any rubbish or other material in the canal bed or on the reserves.

However, beginning on January 12, 1933 the dumping has become constant instead of sporadic, especially by the city of Chicago.

On March 18, 1932, the Corporation Counsel of the city of Chicago rendered an opinion that in an act passed by the State Legislature in 1903, the I. & M. Canal where paralleled by the Chicago Drainage Canal, was practically abandoned, and that the Sanitary District was ordered to fill up such parts of the Illinois and Michigan Canal to "prevent the spread of pestilence and disease throughout the territory in which said Illinois and Michigan Canal is abandoned."

In August, 1932, some dumping in the canal was done by private contractors and was stopped by city police on request of our Department. However, in September, 1932, the city, under the law of 1903 above quoted, asked a permit from the Sanitary District of Chicago to dump refuse in the canal. This permit was obtained but no permit was either obtained or requested from the State. Nothing was done by the city, however, until January, 1933, but on January 12, 1933, the city began dumping rubbish of all kinds in the canal and its reserves between Hoyne Avenue and Western Avenue. On January 16th our inspector reported that about 100 trucks and trailers were dumping with six "bulldozers" levelling off the material. A letter was immediately sent to the city and Director Kohn was notified.

On January 24, 1933, dumping was reported at the rate of 100 cubic yards per hour by city trucks and filling was extended to the canal west of Western Avenue.

On February 3rd, Chief Engineer Cornish again wrote to the Commissioner of Public Works requesting that the city discontinue this filling.

On February 15th, our inspector reported dumping being done in a new location from Homan Avenue east.

On February 15th also a letter was received from the Commissioner of Public Works stating that under an opinion from the corporation counsel, no permit was necessary from the Division of Waterways or from this Department "for two reasons: (1) This portion of the old canal, having legally ceased to be a canal or 'public water,' it does not fall within their jurisdiction; and (2) the Legislature having commanded this portion of the old canal to be filled, no mere executive department or division can overrule the Legislature, or forbid the doing of something which the Legislature has expressly commanded to be done long before such department was created." He also advised that if considered necessary, an opinion be sought from the Attorney General.

On May 12, 1933, Director Kohn issued orders to the Commissioner of Public Works and also to the president of the West Park Board that in conformity with an opinion of the Attorney General, all dumping of refuse of any kind in the Illinois and Michigan Canal should be discontinued at once.

On May 16th, our inspector reported all dumping stopped.

The total yardage of rubbish dumped by the City and West Park Board was reported as approximately as follows:

Between Hoyne and Western Avenues	60,000 cu. yds.
Between Western and Railroad Bridge	2,000 cu. yds.
From California Avenue west 3,000 ft	10,000 cu. yds.
Between Kedzie and Homan Avenues	8,000 cu. yds.
Total approx.	80,000

Since then no dumping has been done in the canal up to the date of this report, June 30, 1933.

Ever since the formation of the Rivers and Lakes Commission it has been its aim and the aim of its successor, the Division of Waterways, to prevent any filling of the Illinois and Michigan Canal or its reserves which might in any way be construed as an official abandonment of the canal until Congress has by act quit-claimed to the State the land now occupied by the canal; and for that reason it has done all in its power to prevent such filling by the city or by other parties.

PERMITS ISSUED.

The following formal permits were issued during the year ending June 30, 1933:

Bridges (State Highway Division)	18
Bridges (Miscellaneous)	11
Piers in Fox Lake and River	10
Shore walls	20
Dock repairs, Chicago River (15,000 lin. ft.)	9
New docks, Chicago River (179 lin. ft.)	2
Dredging	12
Transmission lines and cables	14
Pipe lines	4
Dam repairs	4
Water intakes	1
Sewers	2
Miscellaneous	12
Total formal permits	119
On weekly permit list to Division of Highways	425
Total permits issued	544

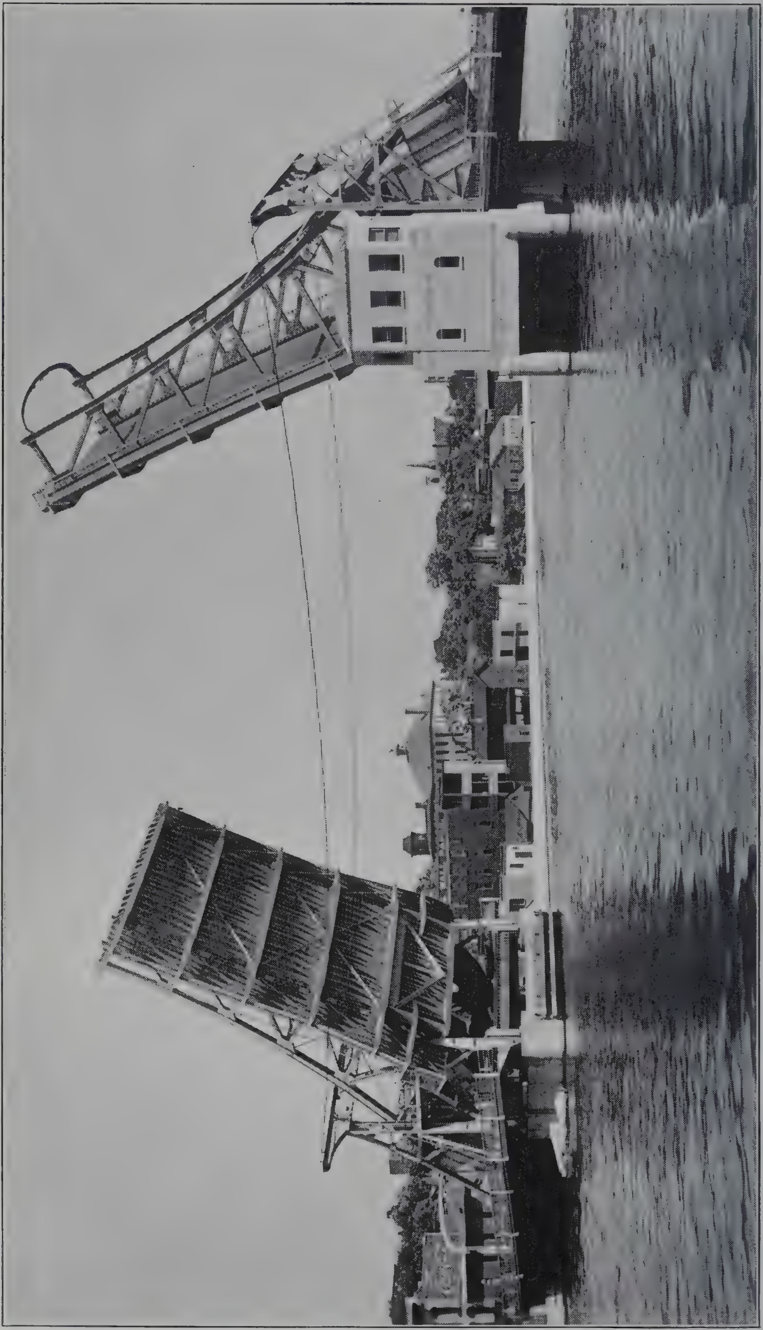
The effect of the general depression in the business world is plainly shown by the list of permits given in the table below from the year ending June 30, 1928 to June 30, 1933:

PERMITS ISSUED.

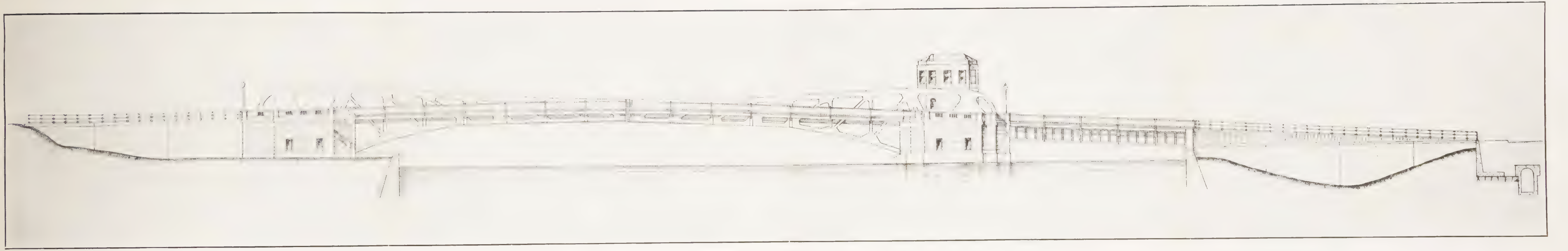
Year.	Formal.	Informal.	Total.
1933	119	425	544
1932	219	449	668
1931	208	317	525
1930	216	380	596
1929	205	657	862
1928	212	486	698

ILLINOIS WATERWAY BRIDGES.

Illustrations.

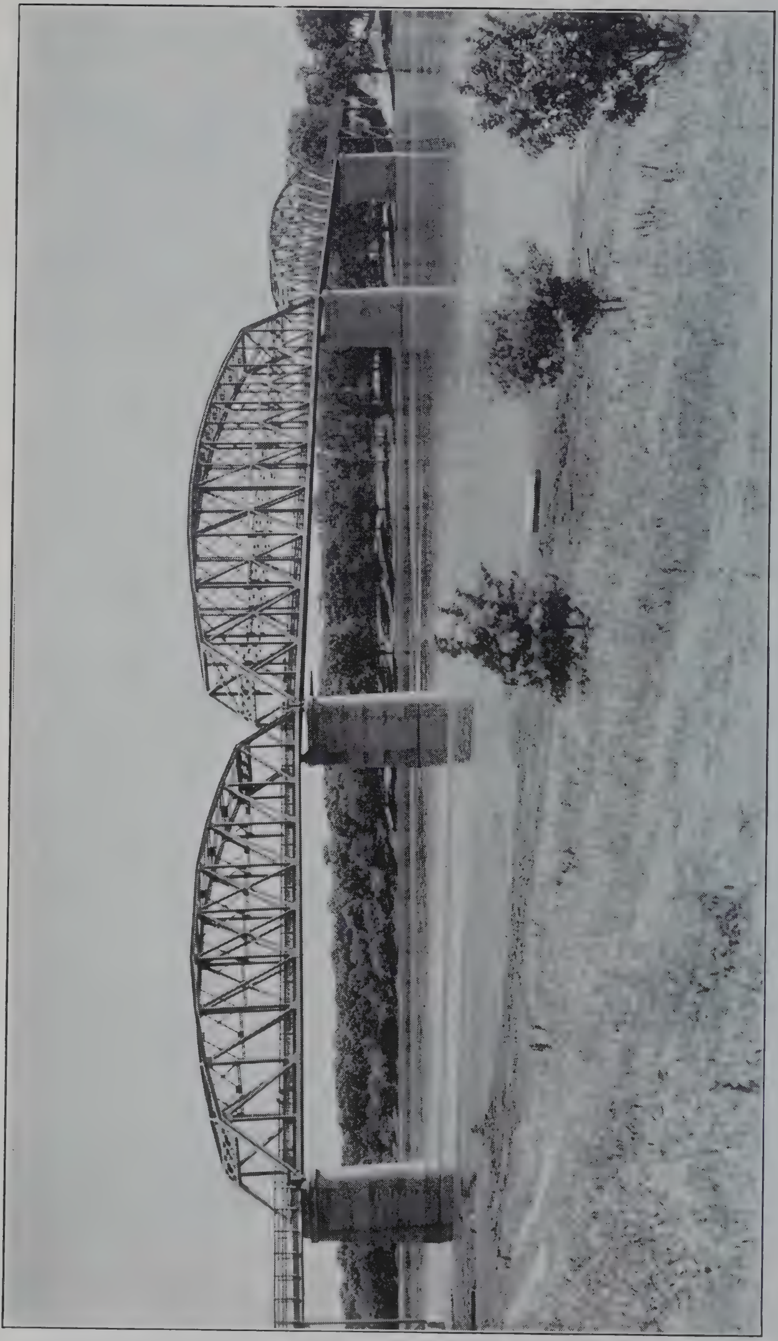


Jefferson Street Bridge, Joliet.

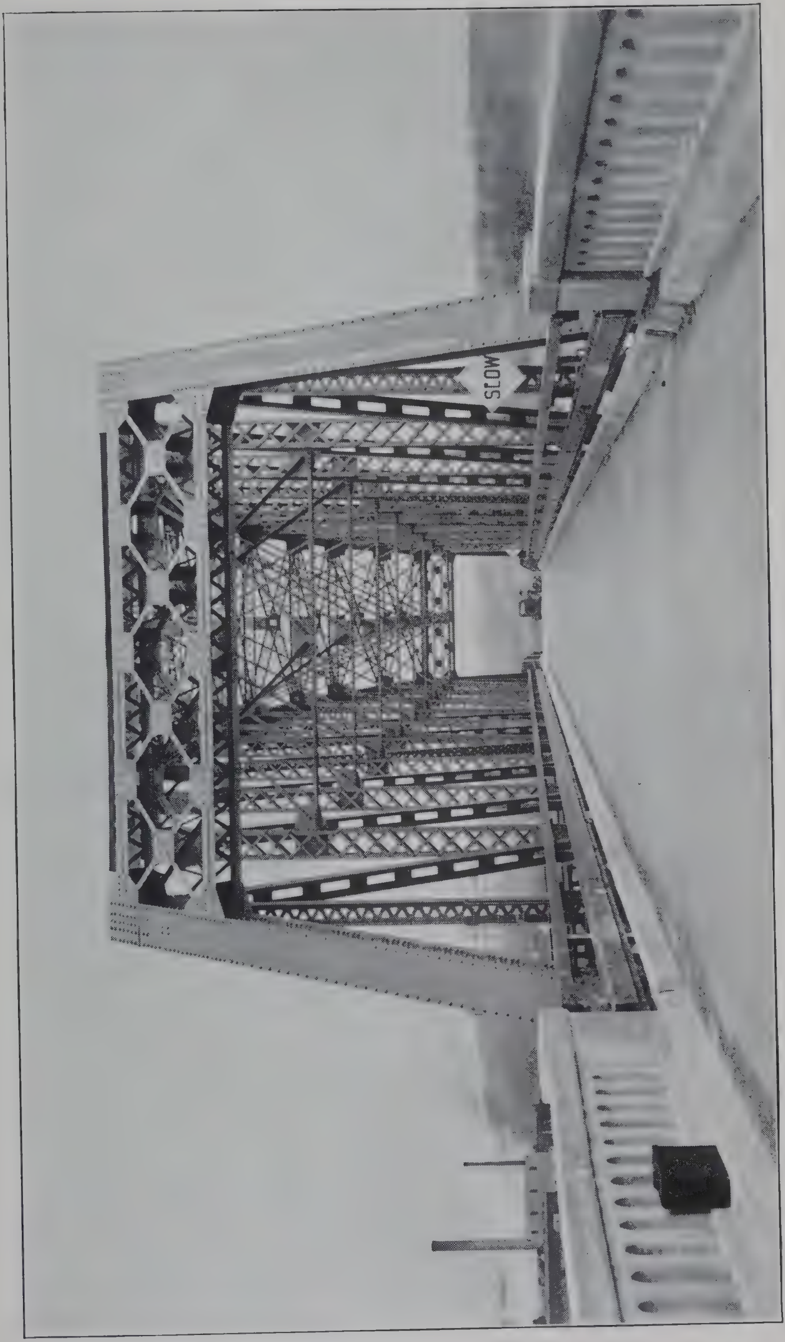


Proposed Ruby Street Bridge, Joliet.

Brandon Road Bridge.



Smith's Highway Bridge, near Channahon, looking southeast.



Marseilles Canal Bridge, end view.

Hilliard Bridge at Ottawa, looking northeast.

BRIDGES.

By GUNNI JEPPESEN, *Bridge Engineer.*

GENERAL OUTLINE.

During the period from December 1, 1932 to June 30, 1933 the work in the office, as well as in the field, has progressed at an even rate of speed and without interruption.

The present status of the work (June 30, 1933) is as follows:

Name of bridge.	Drawings completed, per cent.	Construction completed, per cent.
Ruby Street Bridge, Joliet	70	0*
Jackson Street Bridge, Joliet	100	100
Cass Street Bridge, Joliet	100	100
**Van Buren Street Temporary Bridge, Joliet	100	100
Jefferson Street Bridge, Joliet	100	100
McDonough Street Bridge, Joliet	90	60
Brandon Road Bridge	100	100
Smith's Highway Bridge, near Channahon	100	95
Marseilles Canal Bridge	100	95
Illinois River Bridge at Marseilles	100	75
Hilliard Bridge, Ottawa	90	60

* Old bridge has been removed.

** Has now been removed.

NOTE.—The highway bridges at Morris and Seneca are being built by the Division of Highways.

RUBY STREET BRIDGE.

The Ruby Street Bridge in Joliet is on S. B. I. Route No. 4 and U. S. Route No. 66, connecting Joliet with Chicago.

On account of the importance of this crossing it has been the subject of many and lengthy investigations and negotiations, but it now appears that the work may soon go ahead.

On February 20, 1931, the War Department issued a permit for a single leaf bascule bridge with a 150 foot clear channel. Later the State applied for a permit for a double leaf bascule bridge but this was held up while the U. S. Engineer Office negotiated with the city of Joliet and others and made studies and estimates for a relocation of the channel at, and adjacent to, Ruby Street which would shift the movable span of the bridge some 85 feet to the west and would do away with the rather sharp bend in the channel.

This scheme was abandoned, and on December 16, 1932, the District Engineer requested that the State file a new application for a bridge having a 200 foot clear channel for navigation and with the east face of the west abutment placed about 25 feet landward of the existing shore line. This was done and on January 3, 1933 the new permit for construction was issued.

The bridge will be a double leaf bascule bridge of the trunnion type and with the counterweights below the roadway floor, descending into watertight pits. This type of construction was possible in this case because one of the pits is entirely outside the river area which reduces the obstruction to water flow.

The distance center to center of trunnions will be 257′ 0″.

The width of the roadway will be 44 feet and there will be two six foot sidewalks. The alignment of the bridge, as compared with the old bridge, which was removed some time ago, has been changed so that the center line passes through the intersection between the center lines of Chicago Street and Columbia Street on the east side of the river.

The approach grades do not exceed 5 per cent.

JACKSON STREET BRIDGE.

CASS STREET BRIDGE.

JEFFERSON STREET BRIDGE.

The Jackson, Cass and Jefferson Street bridges in Joliet were fully completed shortly after the Fifteenth Annual Report was published and have been in successful operation since.

HILLIARD BRIDGE, OTTAWA.

The Hilliard Bridge at Ottawa, is a high level cantilever bridge, 1,000 feet long, and with a main span of 500 feet. In addition to a concrete roadway slab, 24 feet wide, it carried two 5-foot sidewalks of precast Haydite slabs and a considerable load of public utility mains. These loads, together with a live load of 20 ton trucks (A. A. S. H. O.—H. 20) result in a very massive structure.

A complete design of the structure was made at this office, including details of all main parts of the bridge. The cooperation of the contractor was invited and secured at all stages of the work and a number of valuable suggestions made by him were accepted and used.

The piers are of the dumb-bell type and are founded on rock. The loads from the main shoe are transferred to the pier by means of a heavy rolled steel slab, planed on top and concreted in place, after being carefully aligned and leveled by means of substantial adjusting screws.

The south abutment is a "buried" abutment while the north abutment is of the reinforced concrete skeleton type with curved-bottom, reinforced concrete, curtain walls extending from column to column and producing the effect of a three-arch structure.

The live load anchorages consist of plate eyebars. Before these were concreted in they were covered with a heavy layer of graphite and machine oil and before the end bearings were grouted the anchor bars were pre-stressed by means of a simple screw jack arrangement.

The following points in the design of the superstructure may be noted:

1—Silicon steel was used for the main truss members.

2—The main compression members all have symmetrical cross sections with a central, longitudinal, diaphragm or web.

3—An effort was made to keep the secondary stresses low and this is reflected in many of the truss details. In the bottom chords of the anchor, and cantilever arms, the field splices were riveted at a stage when these chords were nearly in a straight line. Also, cast steel pin castings were provided at the lower end of the five members meeting at the main shoe. These castings are heavy bearing castings and are finished to bear against the milled end of the member.

4—Pin connections were used in many cases and telescoping joints were avoided, to facilitate erection.

5—Beveled fillers, and beveled cuts on the stringers, were avoided by placing the floor beams at right angles to grade, instead of vertically.

6—On each side of the roadway (and on the inside of the truss) there is a standard wheel guard which will prevent a car or truck out of control from colliding with a truss member. At the same time each sidewalk has two substantial railings, both of which are outside the trusses, thus leaving the space occupied by the trusses entirely open for inspection and painting and doing away with the complicated details which are encountered when the truss members pass through the sidewalk slab.

7—Each sidewalk framework is built of two light place girders, resting on cantilever brackets, and braced, one against the other, by means of ties, or struts, passing below the sidewalk girders and connected to them by means of gusset plates and angles.

The sidewalk surface consists of 4 foot by 5 foot, precast, Haydite concrete, slabs spanning from girder to girder and having lifting holes so that they may be conveniently removed and replaced as required. These slabs were made at the Joliet Penitentiary in compliance with the law which provides that the various State departments shall purchase from the Department of Public Welfare, such materials and supplies as the prison shops are equipped to furnish. The sidewalk girders, with the ties below and the slabs above, form what amounts to a trench in which are carried various kinds of utilities such as gas and water mains, power and light cables, telephone cables, fire alarm cables, etc.

Among the important features of the shop work may be noted:

1—All main truss material was drilled from the solid.

2—Lower chords of anchor and cantilever spans were laid out in the shop in a straight line for reaming of field splices.

3—Trusses for each span are being assembled complete in the shop for reaming of field connections.

GRAIN ELEVATOR.

By Chauncey M. Briggs, *Terminal Engineer.*

On December 23, 1932 the workhouse of the State-owned elevator at Thirty-first Street and Damen Avenue, known as the "Santa Fe Elevator", was completely destroyed by fire and explosion.

This elevator, according to contract, remained in the possession of the Santa Fe under lease to the Stratton Grain Co. for a period of 20 years, dating from 1928. Under the contract the maintenance and insurance were to be carried by the railroad, the State being joint beneficiary and to receive the insurance in case the railroad chose not to exercise its option to rebuild.

Messrs. Walter and Ahlvin of this division cooperated with the railroad to obtain a contractor for removal of the debris for $15,000.00, as against a best bid of $54,000.00 obtained by the Railroad Company.

After complete check of the loss the adjusters arrived at a settlement of $280,337.40, which was accepted by the Santa Fe with approval of the State, and placed in escrow pending adoption of plans for rebuilding satisfactory to the State and starting of actual contract.

Plans prepared by Metcalf Company were checked by this office as to facilities and by the State Architect and were found adequate in equipment and superior in capacity and construction to the destroyed portion.

The facilities for transfer and conditioning of grain are better than in the previous structure, especially as to the marine leg, and the storage capacity has been increased from 1,250,000 bu. to 1,500,000 bu. The bleaching process, however, was omitted as that function has practically become obsolete in modern practice.

The entire reconstruction will cost about $145,000.00 more than the settlement of the claim, which amount will be borne entirely by the Santa Fe.

The new workhouse will be a reinforced concrete structure throughout except the cupola over the storage bins, which will be of structural steel with corrugated iron side walls and steel deck roof, 14 circular bins 27′ 4″ inside diameter by 106′ high, together with the interspace bins, will considerably increase the capacity of the entire plant. Provision is made for ship loading from the west bins and for processing from the south bins.

The elevating equipment will consist of three legs of 25,000 bu. per hour each and one cleaner leg of 8,000 bu. per hour, which may be interchangeable in use. All legs will be vented to the open air and all operating equipment will be driven by individual underwriters approved motors. A most complete dust collecting system is provided and the latest safety devices for prevention of explosion and diminution of danger from explosion and fire will reduce the risk to a minimum.

Though the storage capacity of the elevator will be exceeded by several in Chicago, the operating and transfer facilities will be the best in this area and the plant as a whole will be the most modern in the country.

Two inspectors are furnished by the Santa Fe Railroad, one by the underwriters, one by Robert W. Hunt Co., and one by the Stratton Grain Co.

At present the substructure is complete, forms have been erected and pouring started on the bins. The structure should be complete for winter storage this year.

New insurance coverage on the elevator will be carried by the Santa Fe with the State as joint beneficiary, the same as in the former policies. The contract period for tenancy of the railroad will expire in 1948 the same as before, at which time, according to contract, the State will take physical possession of the improved elevator.

HYDRO-ELECTRIC POWER PLANTS.

All work on the design of power plants at each of the dams on the Illinois Waterway was discontinued except for the tracing of 24 drawings which was done in the spare time of some men.

BARGE TERMINAL AT DAMEN AVENUE.

Sets of preliminary plans have been drawn and details of certain portions have been made in such time as could be spared from construction work. These plans, however, await final approval and details of substructure cannot be completed until information is available as to foundation conditions. No tracing has been completed.

The Legislature has authorized the Director to call upon the Illinois Central and Santa Fe Railroads to make $200,000.00 available for this terminal improvement, in accord with the contract of September 15, 1928.

TERMINAL DESIGN.

The present terminal design calls for a one story building 85′ x 270′ to be located along the west side of the Santa Fe Slip, half way between Ashland and Damen avenues. There are nine 10-foot roller doors each provided with movable ramps on the water front. There are doors on the opposite side leading to a 20-foot rail loading platform which extends 100 feet beyond the north end of the building and past the south end with a ramp to the paved truck area. Two rail tracks will serve the long platform and extend to the end of the slip to provide bulk loading. On the south end a paved area provides truck loading space for 11 trucks with as many vertically sliding doors.

A second story over a small portion provides ample office space. Up and downstairs toilets care for office and warehouse help. Heat will be provided for lockers, toilets and office, though the main warehouse will not be heated.

A small shop is located at the north end of the warehouse for repair of mobile equipment.

The design does not contemplate a monumental structure, as the funds will not permit and still provide for the necessary bulkhead repairs.

The structure will be substantial, however, and arranged to give the maximum possible facility of operation so as to obtain great capacity with a limited expenditure.

FIELD DIVISION.

J. H. Walker, *Division Engineer.*

Field operations are partially covered in the Fifteenth Annual Report and for the period of June 1st to November 30th, 1932, will be found embodied in that issue annual report pages 76 to 87, inclusive.

Construction Progress.

JACKSON STREET BRIDGE, JEFFERSON STREET BRIDGE, CASS STREET BRIDGE, VAN BUREN STREET TEMPORARY BRIDGE.

The construction of these bridges was finished shortly after publication of the Fifteenth Annual Report.

The Cass Street Bridge was not thrown open to traffic until December 17, 1932, although the bridge structure and west approach were completed several weeks sooner. The operator house and electrical work was completed in January. In order to avoid delay and inconvenience to traffic it was decided to balance the leaves of both Cass and Jefferson Street bridges at night between midnight and 5:00 a. m. During the testing and balancing of the Cass Street Bridge early in February the first fatality of the entire bridge construction program occurred. A small automobile raced down Western Avenue hill through the traffic gates and the top half of the body being sheared off by the counterweight, catapulted into the river through the opening underneath the counterweight. There were three occupants in the car, two of whom were rescued by the workmen on the bridge but the third was drowned and the body not recovered until April. A coroner's jury rendered a verdict blaming carelessness on the part of the driver as partly the cause of the accident.

This delay was caused through the unearthing of a large high pressure water main in the east approach which had been erroneously charted at the time it was installed. Considerable re-design and relocation of retaining walls was thus made necessary and some changes were made in the water main. During this period weather conditions changed severely and the fill became badly frozen. Because of this it was considered inadvisable to pave the approach with concrete slab. Arrangements were made at slight extra cost whereby the contractor placed and maintained a temporary pavement until weather conditions permitted concreted paving early this last April.

The short section of retaining wall of the Brandon Road Joliet Pool which had to be omitted by the U. S. Engineering Department contractors because of the temporary bridge at Van Buren Street was included in the substructure contract for McDonough Street Bridge. As soon as the temporary bridge was removed this section of wall was constructed under joint inspection by U. S. Engineering Department and Division of Waterways.

MC DONOUGH STREET BRIDGE.

The substructure of the McDonough Street Bridge Joliet was completed above pool elevation early in January and carried to completion by January 21, 1933. Some delay was caused by extreme cold weather making it necessary to carefully protect all concrete work with straw, quilts and heating with salamanders by the contractor, the Powers Thompson Construction Co., of Joliet.

Because of delay in awarding the superstructure contract and on account of it being necessary to finish the abutments to permit the U. S. Engineering Department to flood the pool, the substructure was completed long before commencement of the erection of steel. The Joliet Pool was raised to final level elevation 539.00 February 2, 1933 by the U. S. Engineering Department.

Steel erection was started April 25, 1933 by the L. P. Friestedt Company subcontractors to the Mississippi Valley Structural Steel Co., and inasmuch as the waterway was to be opened to navigation before completion of the bridge it was necessary to erect this bridge in the open position. Work is progressing rapidly with every indication that steel work should be substantially completed about October 1, 1933. The entire superstructure should be entirely finished except for adjustment and permanent electrical connection by about November 15, 1933.

Approaches will be awarded under separate contract and it is expected to have the bridge open to traffic by the latter part of November or early in December.

The operator house will be completed prior to completion of the superstructure and will therefore not delay electrical installation.

Erection of the superstructure was done by the L. P. Friestedt Company subcontractors of the Mississippi Valley Structural Steel Co., who fabricate the steel in their Chicago plant. Erection was started about December 1, 1932.

Some difficulty was encountered when the U. S. Engineering Department flooded the Dresden Island Pool. The bridge was erected on falsework consisting of pile supported platforms just above pool elevation, with the steel bents resting on the platforms to carry the steel of the bridges. The flooding of the pool created a bad condition for the delivery of steel which had to be made by motor truck. The old road to the old Smith Bridge having been flooded out it was necessary to haul the heavy loads over the new cut and fill of the new road and this handicapped the erector seriously, as even with a caterpillar tractor the trucks were mired in mud causing a myriad of short delays, so that deliveries could not be kept ahead of erection.

No little concern for the safety of the structure was felt by all concerned when early in February a heavy snow blocked all roads and a severe cold spell formed ice in the river that started to jam against the false work.

The ice-jam however was broken without any damage.

The shop fabrication of the steel was apparently well managed as the steel in the field fitted together excellently. The only points where trouble was encountered were at the expansion joints and at the south abutment.

The trouble at the expansion joints was due to a misinterpretation of plans.

Tipping of the south abutment caused trouble in setting the steel at that point. This abutment was not carried to rock and the pressure at the toe when the fill was placed behind the abutment caused a slight compression at this place tilting the top about 2½ inches toward the river. It was necessary to reframe the steel floor members to accommodate this difference and properly seat the steel.

A well keyed footing with re-inforced concrete legs to the abutment was designed somewhat in the form of a knee brace to halt the movement of this abutment pier. This contract was awarded to the W. T. Sellen Company of Aurora and the work is progressing rapidly. It is very probable that this bridge will be thrown open to traffic early in July.

MARSEILLES BRIDGES.

The Marseilles canal span including the timber approach to the lock which will act as a temporary approach to the new canal bridge until the new river bridge is completed, was thrown open to traffic February 1, 1933, it being complete except for painting.

The Marseilles River Bridge is fast nearing completion and the combined structures will be opened to traffic about September 15, 1933.

The substructure was completed May 1, 1933 and the steel was started shortly thereafter by the L. P. Friestedt Company subcontractors of the Mississippi Valley Structural Steel Company. The fabrication was done at the Decatur shop and the steel was hauled in by trucks except heavier pieces which were shipped by rail.

Little or no difficulty was experienced in erection, connections, etc., fitting nicely. The bridge is being erected on falsework of steel bents set on cribbing on the rock bottom of the river. The erection derrick also was carried on cribbing on the river bottom the water being quite shallow at this point.

Approaches are included in the substructure contract.

The north span of the old river bridge was swung west at its north end pivoting on its south end out of the way of the new river bridge and was thus used instead of constructing a temporary timber trestle span.

The removal of the old river structure is included in the superstructure and will be commenced as soon as the new bridge is opened to traffic.

HILLIARD BRIDGE—OTTAWA.

A brief description of the erection of the largest of the new bridges, the new cantilever bridge over the Illinois River at Ottawa, Ill. is given herewith by L. T. Wylie, resident engineer on the job. This project is notable both for the careful study given to all features of design and construction and for the close cooperation obtained between the forces of the contractor and of the State.

The State specified that before proceeding with erection the contractor should work out a detailed program and submit for approval of the engineer. This was carried out in a thoroughly satisfactory manner and promoted speed in the field work and harmony between field forces of the State and of the contractor. Some features of the methods adopted are the following:

1. Cantilever erection was employed as far as possible. The contractor used two bents of steel falsework under each span and none at all in the main span.
2. Steel wedge jacks were used under all falsework posts which made it possible to easily and quickly adjust the elevation of the truss to any desired point and hold it there.
3. Bottom chord splices of anchor and cantilever arms were riveted at a stage of erection when these chords were nearly in a straight line, thus eliminating most of secondary stresses that might have occurred at those points otherwise.
4. Rivet forges were operated by compressed air, thus securing steady heat with minimum trouble.
5. Transit mixers were used in placing concrete for roadway slab and the minimum mix occupied three and one-half minutes.
6. Concrete in roadway slab was vibrated by air hammers to eliminate honey-combing on under side, and a drier concrete mix was thus obtained than would otherwise have been possible.
7. Fourteen days of curing of roadway slab with damp sand was specified and secured.

A few comments on the manner in which the plans for this job worked out in actual construction may be of interest. It should be said here that the State welcomed the cooperation of the contractor at all stages and in a number of cases improved or simplified operations were submitted by the contractor and adopted by the State. The State did not make detailed design drawings of the entire job, but only of main truss joints and part of floor system, etc., the remainder of the details being made by the contractor and approved by the State after checking. All shop details were checked and approved before orders for steel were closed. In a few cases it was found that plans did not work out as well as had been hoped. Thus the amount of initial stress put into the anchorage eyebars was not so great as had been expected due to the fact that the concrete had bonded to the bars despite the oil with which they had been coated. However, the uplift in this structure is not large and a stress was induced in the bars equal to the maximum probable uplift. In most cases, however, the work proceeded according to plan and quite smoothly. About 1,800 tons of steel, i. e. 1,000 1 ft. of bridge, were erected (not riveted) in six weeks time without serious misfit or delay. Some features which might have been expected to cause delay or added expense did not do so and were welcomed by the field forces. Such was the case with the procedure of setting main bearings at the piers, and with some other processes.

The bridge is being jointly built by the State Division of Waterways, State Division of Highways and the city of Ottawa. Excellent cooperation from District Engineer M. J. Fleming of the Division of Highways and from City Engineer H. A. Tolburg of Ottawa is helping to make light work of a heavy task.

The substructure was completed by the MacDonald Engineering Co., June 13, 1933 and the first steel set by the Wisconsin Bridge and Iron Co., contractors for the superstructure, June 20, 1933. The bridge is scheduled to open to traffic November 11, 1933 and it is very likely that this date can easily be met if no unforeseen accidents should intervene.

REMOVAL OF OLD BRIDGE.

In order to clear the waterway for navigation by March 1, 1933 the work of removing the old Ruby Street structure was started by the Powers Thompson Construction Company late in January, 1933. By February 2, the central span had been removed and the dredge "Christobal" of the R. C. Huffman Company was passed through and on down to work in the Marseilles Pool. The remainder of the bridge and its piers were removed by February 28, 1933.

BRIDGE MAINTENANCE AND OPERATION.

As the time approached for the opening of navigation on the Illinois Waterway the question of operation and maintenance of the lift bridges in Joliet and maintenance of navigation lights on the fixed bridges assumed importance.

Examinations were prepared for operators and organization, although a little slow, was finally obtained with good result.

Due to the fact that all of the bridges were new, anticipated supplies and repair and replacements had to be estimated, thus little can be said in the way of determining costs at this time. Repairs were small except for traffic gates and regular operating expense will probably be reduced as regularity of operation and efficiency of organization increases.

Traffic gates were found to be the greatest cause of trouble. This undoubtedly was due to the necessity of educating the motoring public to the fact that when the warning lights and gongs started, the bridge was going to open. They had been so well accustomed to driving across the old fixed bridges at high speed that they seemed to desire to continue even though the warning signals showed they should stop. What appeared to be conclusive evidence of this is in the fact that as the bridges were operated more frequently the breakage of gates decreased. Much public comment was aroused at first as so many went through the traffic gates. The demand for a barrier type gate was strongly pressed. However, the exhorbitant cost of these made their installation prohibitive.

FLOOD RELIEF REPORT.

By L. C. Craig, *Division Engineer.*

This report for the year ending June 30, 1933, covers flood relief work done under Flood Relief Acts passed by the Fifty-seventh General Assembly. This work consisted almost entirely of a continuation of work begun during the preceding year, which is fully described in the Fifteenth Annual Report of the Division of Waterways.

With headquarters at the Chicago office the writer continued the work of supervision and inspection of projects under construction and of investigation of applications for new projects.

BEARDSTOWN AND HARRISBURG OFFICES.

The office at Beardstown was continued as headquarters for flood relief activities in that vicinity. This office was used as headquarters for survey parties in the investigation of flood relief applications and the inspection of work under contract. The office at Harrisburg was also continued during the year, the work being in charge of a resident engineer whose duties included the supervision and inspection of flood relief work in the southern part of the State.

ILLINOIS RIVER VALLEY.

Flood relief work in the Illinois River Valley under the provisions of House Bill No. 698 consisted of a continuation of levee projects along the Illinois River in cooperation with the Federal Government.

The Federal Government is proceeding under Section 6 of the Federal Flood Control Act of 1928, which provides that funds for levee construction may be expended by the Federal Government on tributaries of the Mississippi River insofar as such tributaries are affected by the backwaters of the Mississippi, on condition that the states, or local levee districts, furnish right-of-way and pay 33⅓ per centum of the cost of the work.

LEVEE CONSTRUCTION STANDARDS.

The Federal Government has adopted a grade for levees below Beardstown based on backwater computations made by the Mississippi River Commission. Construction work has consisted of the raising of existing levees to the new adopted grade and the enlargement of the section of each levee to a new adopted standard section. This section provides an eight foot crown, a river-side slope of three feet horizontal to one foot vertical, and a land-side slope to contain a one on five seep line starting on the outside of the levee one foot below the crown.

The minimum distance between the levees on each bank of the Illinois River adopted by the Federal Government for new levee construction is 2,000 feet. The Federal Government and also the State has investigated the feasibility of setting back the levees of certain districts a greater distance to reduce flood heights and secure a more economical plan of construction. On account of the large expense involved due to the necessity of purchasing reclaimed land and in some cases rebuilding pumping plants, it was found more economical in most cases to enlarge the levees at their present location.

STATE COOPERATION WITH THE FEDERAL GOVERNMENT IN LEVEE CONSTRUCTION.

Drainage and levee districts along the Illinois River found it impossible to raise the necessary funds to pay one-third of the cost of levee construction, therefore, the State under the provisions of House Bill No. 698, made this one-third contribution. In each case an agreement was drawn up between the State and the levee and drainage district, which provided that the State would furnish the one-third cost, the district would furnish the right-of-way, and maintain the levee after construction, and the Federal Government would construct the work. State contributions were made direct to Federal Government before construction contracts were let, the sum contributed being based on the cost of construction as estimated by the Federal Government engineers. On some projects the final construction cost was considerably less than the estimated cost and in these cases unused State funds were returned to the State.

ILLINOIS RIVER FLOOD OF 1933.

During May, 1933, a flood occurred on the Illinois River, which, at Peoria and points above, exceeded any previous flood of record. This flood crested at Peoria on May 18th with a stage of 25.4, four-tenths of a foot higher than the previous maximum stage of October, 1926. At Havana the crest height equaled that of 1926 and at Beardstown it was eight-tenths of a foot or less below that of 1926. This flood entered the Mississippi River at a comparatively low stage of the latter stream. Had the Mississippi been at or near flood stage, the Illinois River would have exceeded the 1926 flood record at all points. The crest discharge at Beardstown as measured by the United States Geological Survey was about 90,000 cubic feet per second.

The flood of May, 1933, clearly demonstrated the great benefit to drainage and levee districts in the Illinois River Valley and to the community at large from the expenditure of State funds appropriated by the several Flood Relief Acts since 1927 for rebuilding and strengthening levees. Only three districts were flooded below Beardstown, and as far as known only minor levee breaks occurred above Beardstown. None of the levees which had been enlarged and reconstructed in cooperation with the Federal Government were broken or in any degree endangered. The concrete seawall and levee system constructed by the State at Beardstown in 1927 and 1928 saved that city from inundation and prevented a large flood loss and clearly justified its cost.

View taken at Beardstown May 25th, with gage at 25.3, two-tenths feet below crest of flood, showing wagon bridge and portion of concrete seawall with sandbag protection at bridge approach.

WORK ACCOMPLISHED.

No new projects were begun and no projects under construction were completed under this appropriation since December 1, 1932. The period previous to the above date is covered by the preceding Annual Report (15th), which report is referred to for complete details of contributions made by the State to these various projects.

Work accomplished since the preceding Annual Report consisted solely of a continuation of work by the Federal Government on the following projects:

PROJECTS UNDER CONSTRUCTION.

District.	Federal Aid.	State Aid.	Total estimated cost.
Big Swan Drainage and Levee District	$168,720 00	$ 84,360 00	$253,080 00
Hartwell Drainage and Levee District	179,066 67	89,533 33	268,600 00
Keach Drainage and Levee District	281,280 00	140,640 00	421,920 00
Scott County Drainage and Levee District	140,400 00	70,200 00	210,600 00
Valley City Drainage and Levee District	154,133 33	77,066 67	231,200 00
Hillview Drainage and Levee District	140,400 00	70,200 00	210,600 00
Total	$1,064,000 00	$532,000 00	$1,596,000 00

On June 30, 1933 the unexpended balance of the appropriation was $35,949.91 and this balance was reappropriated by the Fifty-eighth General Assembly and will be expended for new projects during the coming year.

(SENATE BILL NO. 777. APPROVED JULY 8, 1933.)

AN ACT *making an appropriation to the Department of Purchases and Construction for the purpose of carrying out certain flood relief projects in the Illinois River Valley.*

WHEREAS, The amount of money herein appropriated is paid, or will be paid, to the State of Illinois by the Federal government through the Mississippi River Commission for flood relief in this State, now therefore

Be it enacted by the People of the State of Illinois, represented in the General Assembly:

SECTION 1. The sum of one hundred ten thousand dollars ($110,000.00), or so much thereof as may be necessary, is appropriated to the Department of Purchases and Construction for the biennium ending June 30, 1935, for the purpose of carrying out the provisions of "An Act authorizing the Department of Purchases and Construction to carry out certain projects for the purpose of flood relief in the Illinois River Valley, and making an appropriation therefor," approved June 17, 1929.

2. The appropriation herein made is subject to the provisions of "An Act in relation to State finance", approved June 10, 1919, as amended.

APPROVED July 8, 1933.

RIVERS OF ILLINOIS AND THEIR TRIBUTARIES OTHER THAN THE ILLINOIS RIVER.

Flood relief work on rivers of Illinois other than the Illinois River, under the provisions of House Bill No. 697, since December 1, 1932, consisted almost entirely of a continuation of work on projects previously started, which projects are listed in the previous Annual Report.

Three projects on which work was continued consisted of levee improvements. One of these, namely, at the City of Cairo, was completed. Four other projects which are under construction provide flood relief by straightening river channels.

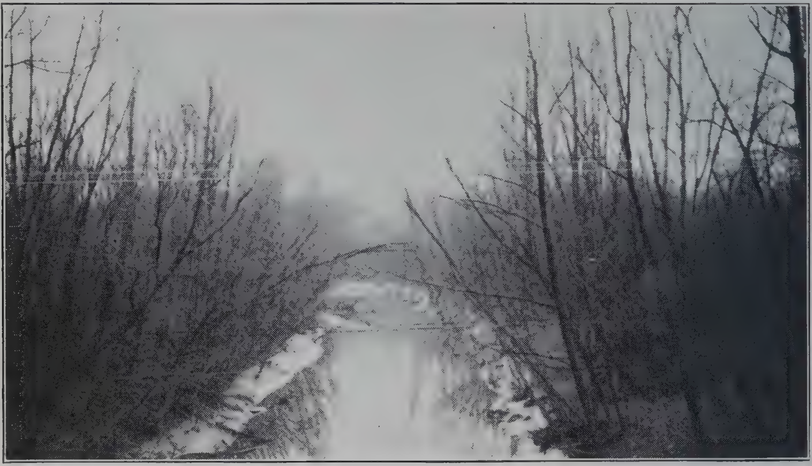
IMPROVEMENT OF THE MIDDLE FORK AND SOUTH FORK OF SALINE RIVER.

The improvement of the Middle Fork and South Fork of Saline River in Saline County, is the most important flood relief project undertaken by the State under this appropriation.

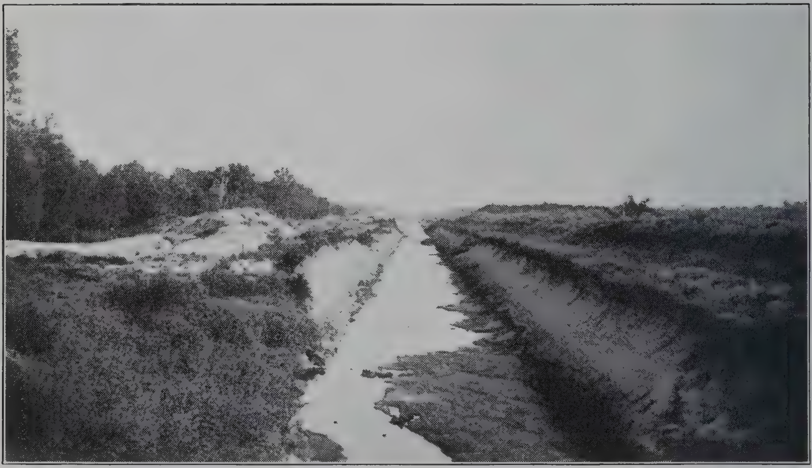
The Middle Fork of Saline River at Harrisburg has a watershed area of about 190 square miles. The South Fork draining about 240 square miles flows into the Middle Fork about 7 miles southeast of Harrisburg.

When this project is completed the State will have spent $191,000.00 in relocating, straightening and enlarging the channel of these streams to provide an outlet for flood waters which formerly endangered the health and lives of the citizens of Harrisburg and vicinity. Also an efficient outlet will have been furnished for a large number of drainage districts above Harrisburg where a large agricultural area has been flooded almost annually because of lack of this outlet.

Already the citizens of Harrisburg have reported a large benefit received from the partial completion of this project. On December 30 and 31, 1932, a rainfall of 4.65 inches was recorded at Harrisburg in a little over 24 hours. Under former conditions this heavy concentration of rainfall would have caused the flooding of a section of the city, and an interruption of traffic on several State highways. With the Middle Fork of the Saline straightened, the flood was carried away quickly with no flooding of the city and no interruption of traffic.



View of Middle Fork of Saline River before straightening.



View of Middle Fork of Saline River after straightening.

SUMMARY OF WORK ACCOMPLISHED.

Work was delayed on several projects during the winter by floods. The Embarrass River project was delayed by Federal injunction, which was made permanent in March, 1933. It is expected, however, that work on this project will be resumed under a revised plan during the coming year. Work on the lower Cache River project was delayed by a Federal injunction, which was settled out of court after a delay of about two months.

During the year (since December 1, 1932), $45,010.21 was expended from this appropriation leaving an unexpended balance on June 30, 1933 of $106,427.00. This balance was reappropriated by the Fifty-eighth General Assembly.

Nearly all the balance remaining in this appropriation will be needed to complete projects under construction and little, if any, will be available during the coming year for new projects.

UNEXPENDED FUNDS FROM THE REAPPROPRIATION OF HOUSE BILL NO. 700 OF THE FIFTY-SEVENTH GENERAL ASSEMBLY.

On December 1, 1932, there remained unexpended from the reappropriation of House Bill No. 700, the sum of $5,060.97. During the past year this sum has been entirely expended.

ILLINOIS AND MICHIGAN CANAL REPORT.

By JOHN A. WALTER, *Auditor and Collector.*

SUMMARY OF SPECIAL CANAL FUND.

July 1, 1932 to June 30, 1933.

Balance on hand July 1, 1932		$97,822.28
Expenditures as below	$34,538.69	
Receipts as below	23,571.57	
Expenditures over receipts		10,967.12
Balance on hand July 1, 1933		$86,855.16

RECEIPTS.

Ninety foot strip, lots and bridge rentals	$15,604.36
Water power rentals	5,729.64
Water pipe rentals and miscellaneous	2,136.35
Tolls and lockages	75.12
Certified copies	26.10
Total	$23,571.57

EXPENDITURES.

Appropriation for I. & M. Canal	$34,538.69
Appropriation for Illinois Rivers	15,161.20

ILLINOIS AND MICHIGAN CANAL EXPENDITURES.

Salary locktenders and officers	$10,282.50
Labor pay rolls	10,864.45
Repairs	10,024.33
Operation and maintenance	3,265.12
Equipment	2.25
Permanent improvements	100.04
Total	$34,538.69

MAINTENANCE NAVIGATION ILLINOIS RIVERS EXPENDITURES.

Salary locktenders, watchman and officers	$8,607.50
Labor pay rolls	3,542.85
Repairs	273.95
Operation and maintenance	2,736.90
Total	$15,161.20

NUMBER OF BOATS RUNNING, TOLLS AND LOCKAGE COLLECTED ON THE ILLINOIS AND MICHIGAN CANAL.

	Joliet.	LaSalle.	Total.
Tolls	$67.56	$7.56	$75.12
Boats cleared	19	4	23

SUMMARY OF ACTIVITIES.

The earned income during the past fiscal year was considerably less than the previous year, due principally to discontinuance of rental heretofore received for water power furnished at Jackson Street Dam, the rental from which stopped when the dam was removed in January, 1933, also the rental collections were materially reduced due to economic conditions.

Expenditures exceeded those of the previous year, as employees formerly paid from appropriations for Surveys and Investigations and Maintenance of Navigation Illinois Rivers employees were transferred to the Illinois and Michigan Canal Fund, also an extraordinary expenditure of $8,747.50 for washed out towpath and bank west of Lock 11 in LaSalle County and of $1,050 for repair of break in towpath west of Channahon near the old Kankakee feeder. Notwithstanding these expenditures and the reduced income there is now in the canal fund $75,550.88 more than when the Division of Waterways assumed charge of the Illinois and Michigan Canal on July 1, 1917.

Sixteen new leases of canal reserve were made, including modified lease with the Illinois Power & Light Corporation for canal reserve at LaSalle; new lease with the National Biscuit Company at Marseilles for railroad bridge across the canal to take place of expiring lease with the Manufacturers Bridge Company; there are being executed leases for portion of the former State Yards at Lockport, the old locktender house at Levee Street and written leases with five occupants who heretofore have had verbal leases. Five certified copies of the land sale book were furnished to each of which was attached photostat of the original pages of the sale book. There is pending application of the City of Ottawa for lease of canal land for use as a terminal and renewal of lease with the National Fire Proofing Corporation.

Four leases of canal reserve; also the water power lease with the Public Service Company at Jackson Street Dam was terminated as the dam was removed by the Federal Government and no power can be developed; bill board lease at Joliet cancelled due to construction of retaining wall; ice privilege lease and three water pipe leases at Ottawa were cancelled.

Rental income has again for the past year been considerably reduced due to unemployment conditions and the suspending of the operations of plants located along the canal, and much difficulty is experienced in making prompt collection of rentals.

Survey was made of damage to crops resulting from washed out canal banks west of Lock 11.

Joint recount of Illinois Bell Telephone Company poles on canal land in LaSalle County shows 1,068 poles on the canal reserve and rent for the privilege was proportionately reduced.

Continued efforts were made to prevent encroachments on canal reserve and dumping of refuse or debris in the channel, and "no trespassing" signs erected along the canal reserve in LaSalle County.

Canada thistles and noxious weeds on canal reserve were destroyed, in some cases by the regular canal crew and in two townships they were destroyed by the thistle commissioner.

Towpath Walker Emery Himes died December 5th, and his widow was temporarily appointed his successor; on April 1st Towpath Walker Robert Sigler died and on April 16th Joseph Pray was appointed his successor.

Construction of the new river bridge and west retaining wall at Jackson Street Joliet, made it necessary to remove all the test plates of paint and steel that were immersed in the canal, an examination of all the plates was made by the Assistant Chief Engineer. Two test plates of steel were immersed at the Junction Lock at Brandon Road and will be examined from time to time and record kept to show condition of same.

Gates have been installed by the Federal Government at the new Junction Lock at Brandon Road and the lock is now in operation and used to supply water for all the canal levels west of Joliet.

The canal dredge removed fills and bars, deepened the channel and built up the canal banks between Ottawa and LaSalle.

Repaired lock and waste gates, locktender houses, spillways, culverts under canal, leaks in banks, trimmed trees on towpath, repaired and strengthened banks, also deepened ditch along canal between Ottawa and Marseilles to take care of seepage from canal.

On August 1st the towpath about two miles west of Channahon caved in and was promptly repaired.

On August 2nd, following continuous rain storms in vicinity of Ottawa the canal channel could not take care of the additional water from the rains and from the creek that discharges into the canal just west of Lock 11, and the water washed over the banks causing a break in the towpath between Locks 11 and 12, the break being 123 feet in length with depth of 22 feet, and in a section of the canal that was constructed across a peat bog which overlies a sand stone formation and sand deposits. After advertising for bids a contract was entered into on August 23rd with Powers & Thompson who at once started the repair work, steel sheet piling was installed and the bank repaired, and the repairs were completed on September 9th at cost of $8,747.50.

From April 20th to June 30th with Major Paul O. Franson, of the U. S. Army and Mr. Ahlvin, Assistant Engineer at the Waterway Field Office, practically all activities were given to survey and location of five Civilian Conservation Camps along the canal, from Willow Springs to end of canal near LaSalle, preparing applications, laying out the proposed Civil Conservation Corps work and in getting the camps established.

Navigation on the canal closed for the 1932 season on November 25, 1932. Due to opening of the new Illinois Waterway navigation on the Illinois and Michigan Canal has not been formally opened for the 1933 season, which eliminates the necessity of dredging operations and of keeping the levels at boating stage, thereby making a saving of approximately $700.00 per month.

ILLINOIS WATERWAY LANDS.

Due to construction work by the Federal Government and raising of the pool levels, low prices of grain and that the best of the farming lands had been previously either flooded or sold no leases were made the past year.

Collections were $135.00 for previous rental that had been in arrears, and $117.00 for sale of 4.4 acres of land near Dresden Lock.

Canada thistles and noxious weeds on waterway lands were cut and destroyed as required by State law, by the Civilian Conservation Corps and at no expense to the State.

FINANCIAL REPORT.

The following tabulation shows in detail the appropriations for the biennium for the various funds of the Division of Waterways; the amounts expended during each year and the unexpended balance on June 30, 1933. It also shows the collections made during each year of the biennium.

FINANCIAL REPORT—DIVISION OF WATERWAYS.

	Appropriation July 1, 1931 to June 30, 1933.	Expended July 1, 1931 to June 30, 1932.	Expended July 1, 1932 to June 30, 1933.	Total expended for biennium ending June 30, 1933.	Unexpended balance June 30, 1933.
Waterways—General—					
Salaries and Wages	$ 3,600 00	$ 1,800 00	$ 1,433 60	$ 3,233 60	$ 366 40
Office Expenses	25,000 00	9,970 58	8,535 74	18,506 32	6,493 68
Travel Expense	3,000 00	1,213 01	887 23	2,100 24	899 76
Repairs and Equipment	1,000 00	494 48	248 74	743 22	256 78
Engineering Service	100,000 00	34,822 39	23,338 34	58,160 73	41,839 27
Surveys and Investigations	70,000 00	29,370 46	21,560 02	50,930 48	19,069 52
Prevention of Obstructions	27,000 00	14,322 45	8,299 39	22,621 84	4.378 16
Steam Gauging	12,000 00	3,865 59	8,015 08	11,880 67	119 33
Flood Relief—					
Emergency H. B. 700	16,552 30	11,805 33	4,735 93	16,541 26	11 04
Illinois River H. B. 698	620,791 68	511,179 03	73,662 74	584,841 77	35,949 91
Other than Illinois River H. B. 697	373,419 24	147,229 93	119,762 02	266,991 95	106,427 29
Indian Grave & So. Quincy H. B. 699	12,378 37	12,195 81	181 50	12,377 31	1 06
Levee Wall at Naples S. B. 638	2,500 00	1,938 82	241 38	2,180 20	319 80
Improvement Navigation Fox River	25,000 00		23,740 95	23,740 95	1,259 05
Waterway Construction Fund	3,000,000 00	653,745 14	1,460,949 12	2,114,694 26	885,305 74
Illinois and Michigan Canal	100,000 00	26,241 34	34,538 69	60,780 03	39,219 97
Maintenance and Navigation Illinois Rivers	50,000 00	25,382 78	15,161 20	40,543 98	9,456 02
Total	$4,442,241 59	$1,465,577 14	$1,805,291 67	$3,290,868 81	$1,151,372 78

	July 1, 1931 to June 30, 1932.	July 1, 1932 to June 30, 1933.	Total collections July 1, 1931 to June 30, 1933.
Collections—			
Illinois and Michigan Canal Fund	$32,079 58	$23,571 57	$ 55,651 15
Flood Relief Refunds	17,020 95	45,903 94	62,924 89
General Revenue Fund		30 91	30 91
Waterway Maintenance Fund	2,109 96	135 00	2,244 96
Waterway Fund	163,571 89	67,410 72	230,982 61
Total	$214,782 38	$137,052 14	$351,834 52

PUBLICATIONS FOR DISTRIBUTION BY THE DIVISION OF WATERWAYS.

Issued by the Rivers and Lakes Commission of Illinois, 1911–1916.

BULLETINS.

No. 1. The Conservation of Water Power in the DesPlaines and Illinois Rivers and the Improvements of these Rivers for Navigation. 1911.

No. 2. Prospectus of a project for a Deep Waterway and conservation of natural resources of the State of Illinois, prepared by Lyman E. Cooley. 1911.

No. 3. Uses of the Great Lakes. 1912.

No. 4.* Land Drainage in Illinois, by Robert Isham Randolph. 1913.

No. 5. A compilation of money spent by the Government on various Harbors, Rivers and Canals, and the riparian property holders benefited. 1912.

No. 6. Argument on behalf of the State of Illinois supporting the prayer of the Sanitary District of Chicago for a permit to take 10,000 cubic feet of water per second from Lake Michigan, by Isham Randolph. 1912.

No. 7.* The 1912 Flood on the Lower Mississippi, by A. L. Dabney, Consulting Engineer, and "The 1912 Flood in the Ohio and Mississippi Rivers," by H. C. Frankenfeld. 1912.

No. 8. Proceedings of the organization meeting of the Association of the Mississippi Valley States for river control. 1912.

No. 9. The Illinois Water Power Waterway. 1912.

No. 10. The Illinois Waterway—a Guide for Navigators from Lake Michigan to the Mississippi River via the Chicago Sanitary and Ship Canal, the Illinois and Michigan Canal and the Illinois River. Also an Alternate Route via the Illinois and Mississippi Canal. Fifth edition. 1928.

No. 11.* European Harbor Development, by Robert R. McCormick. 1912.

No. 12.* Common Sense applied to the Inland Waterway Problem, by Robert R. McCormick. 1912.

No. 13. The Illinois Waterway, a Review, by Isham Randolph. 1912.

No. 14. Water Resources of Illinois—a cooperative report prepared by Rivers and Lakes Commission and A. H. Horton, District Engineer of the United States Geological Survey. 1914.

No. 15.* The Illinois Waterway—a project for a waterway of eight feet minimum depth between Lockport and Utica and available for immediate construction. 1914.

No. 16.* Stream Pollution and Sewage Disposal in Illinois with Reference to Public Policy and Legislation, by LeRoy K. Sherman. 1915.

No. 17.* Report of Survey and Investigation of LaMoine River, with Reference to Flood Control and Navigation.

No. 18.* Flood Control for Pecatonica River. 1916.

No. 19.* Projects for a Navigable Waterway from Southern Illinois Coal Fields to Mississippi River. 1917.

No. 20.* The Illinois Waterway Report, with plans and estimates of cost of a deep waterway from Lockport to Utica by way of the DesPlaines and Illinois Rivers. Internal Improvement Commission. 1909.

No. 21.* Surface Water Supply of Illinois. Internal Improvement Commission. 1908–1910.

No. 22. Report (and Plans*) for reclamation of lands subject to overflow in the Kaskaskia River Valley, Illinois. 1910–1911. Postage, 16 cents.

No. 23. Report from the prevention of overflow of the Little Wabash and Skillet Fork Rivers. 1911. Postage, 16 cents.

No. 24. The Illinois River and its Bottom Lands, by Alvord and Burdick. 1915. Second edition, 1919.

No. 24½. *Report, map and profile of Fox River. 1915.

Annual reports of Rivers and Lakes Commission. 1912,* 1913, 1914, 1915,* 1916.*

ISSUED BY THE

DIVISION OF WATERWAYS.

Successor to Rivers and Lakes Commission.

*First Annual Report. 1917–18.

Second, Third, Fourth, Fifth, Sixth, Seventh, Eighth, Ninth, Tenth, Eleventh, Twelfth, Thirteenth, Fourteenth, Fifteenth and Sixteenth Annual Reports. 1918–33 inclusive.

Saline River Report. 1920. (See Third Annual Report.)

Inland Waterways and Transportation Costs, by M. G. Barnes. 1920.

No. 25. Big Muddy River Report. 1922. (Also in Fifth Annual Report.)

No. 25½. Floods in Illinois. 1922. Causes, results and remedies. (Also in Fifth Annual Report.)

Pecatonica River Report. 1924. (See Seventh Annual Report.)

Report of the Interstate Harbor Commission of Illinois and Indiana on Harbor and Terminal Development at the State line between Illinois and Indiana, and in Chicago Industrial District. 1922.

No. 26. Calumet Lake and Chicago–Nickel Plate Agreement. 1926.

No. 27. Laws of Illinois relating to Waterways. 1926.

No. 28. National Aspect of Lakes-to-Gulf Waterway — Diversion of Waters from Lake Michigan—Boundary Waters, Treaty, etc. 1926.

No. 29. "Flood Control Report." 1929. An engineering study of the flood situation in Illinois, prepared under the direction of Wm. F. Mulvihill, Supervisor of Illinois Waterway Construction, and L. D. Cornish, Chief Engineer.

Map of Chain of Lakes Region, McHenry and Lake Counties. 1932.

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* On file in office of Division of Waterways, Springfield. Supply for distribution exhausted.

For any of the foregoing publications, address Division of Waterways, Room 113, State House, Springfield, Illinois.

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STATE OF ILLINOIS

HENRY HORNER, *Governor*

AUG. 26TH 1818

SEVENTEENTH ANNUAL REPORT OF DIVISION OF WATERWAYS

July 1, 1933 to June 30, 1934

★

Issued By
DIVISION OF WATERWAYS
DEPARTMENT OF PUBLIC
WORKS AND BUILDINGS

[Printed by authority of the State of Illinois.]

STATE OF ILLINOIS

HENRY HORNER, *Governor*

AUG. 26TH 1818

SEVENTEENTH ANNUAL REPORT OF DIVISION OF WATERWAYS

July 1, 1933 to June 30, 1934

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ADMINISTRATIVE OFFICERS OF THE DEPARTMENT OF PUBLIC WORKS AND BUILDINGS, DIVISION OF WATERWAYS, FOR THE FISCAL YEAR JULY 1, 1933 TO JUNE 30, 1934.

Henry Horner, Governor.
Robert Kingery, Director.

DIVISION OF WATERWAYS.

Walter M. Smith, D. Sc. Acting Chief Engineer to June 1 Chief Engineer June 1 to June 30, 1934.
M. V. Ahlvin, Assistant Chief Engineer June 1 to 30, 1934.

BUREAU CHIEFS.

W. G. Potter, Chief of Bureau of Rivers and Lakes Control.
Gunni Jeppesen, Bridge Engineer.
C. M. Briggs, Terminal Engineer.
John A. Walter, Auditor I. and M. Canal.
A. H. Harrison, Accountant.

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WATERWAYS.

Walter M. Smith, *D. Sc., Chief Engineer and Acting Head of Division.*

This is the Seventeenth Annual Report of the Division of Waterways covering the work of the division from July 1, 1933 to June 30, 1934.

The Department of Purchases and Construction was legislated out of existence on June 30, 1933 and the Division of Waterways was placed under the Department of Public Works and Buildings where it had been before the creation of the Department of Purchases and Construction. This change placed the Division of Waterways in the same department as the Division of Highways, Division of Parks and Division of Architecture. As it is necessary for these four divisions to work in close cooperation this organization with the four divisions under the same director is very satisfactory.

On October 1, 1933, the headquarters office of the Division of Waterways was moved to the State Capitol Building at Springfield making the Chicago office a branch office which was moved to No. 35 East Wacker Drive. The temporary organization for the construction of the barge and canal terminal at Chicago was housed in the Chicago office.

On the same date the Bridge Engineer and his force were moved to the field office at Joliet.

JURISDICTION OF THE DIVISION OF WATERWAYS.

The Division of Waterways being a successor to the Rivers and Lakes Commission, all powers, duties and jurisdiction of the said commission became vested by law in the Division of Waterways, especially as to the jurisdiction over all rivers and lakes of the State of Illinois, to prevent pollution thereof and encroachments thereon. The powers and duties of the former Illinois Waterways Commission with reference to the construction, operation and maintenance of the Illinois Waterway and the development and utilization of the power thereof; and also the powers and duties of the former Illinois and Michigan Canal Commissioners for the control and management of the Illinois and Michigan Canal, the maintenance of the navigability thereof and lease of the canal lands are vested by law in the Division of Waterways.

The Division of Waterways is the custodian of the Illinois Waterway and of the Illinois and Michigan Canal and has charge of operation and maintenance of operating machinery on all the movable bridges on these waterways.

Application must be made to the Division of Waterways for a permit for the construction of any structure on any river, lake or waterway in the State of Illinois and such a permit must be approved before construction can be started.

ILLINOIS WATERWAY BRIDGES.

Work was continued on the construction of the bridges across the Illinois Waterway, the following bridges being completed during the year:

Marseilles Canal Bridge.
Marseilles River Bridge.
Smith's Highway Bridge.
Hilliard Bridge, Ottawa.
McDonough Street Bridge, Joliet.

Proposals were called for and contracts let for the construction of Ruby Street Bridge, Joliet. Work was started on both substructure and superstructure contracts in January 1934.

A more detailed report on bridge construction will be found in the reports of Mr. M. V. Ahlvin, Assistant Chief Engineer and Mr. Gunni Jeppesen, Bridge Engineer.

BUREAU OF RIVERS AND LAKES CONTROL AND FLOOD RELIEF.

As there was only a limited amount of funds on hand for flood relief at the end of the 57th Biennium which amount was reappropriated but no additional appropriations made, there was not sufficient flood relief work to continue this as a separate division and in October, 1933, this division was abolished and the flood relief work placed under the Bureau of Rivers and Lakes Control.

For the first time a complete organization was constructed to carry on the work of this Bureau consisting of the Chief, two District Engineers, one for the northern and one for the southern district, four Investigators, one Draftsman, one Stenographer and seventeen Inspectors. Under this organization the work of prevention of obstructions and dumping in streams and lakes is much more thoroughly carried out than formerly.

A detailed report on the work of the Bureau will be found in the report of Mr. W. G. Potter, Chief of the Bureau.

BUREAU OF BRIDGES—WATERWAY CONSTRUCTION (TEMPORARY).

In May, 1934, due to decrease of work in the construction of bridges, the office of the Division Engineer in charge of construction was abolished and the work of both design and construction of bridges was combined under the Bridge Engineer.

A detailed account of the work of this division accompanied by illustrations will be found in the report of Mr. Gunni Jeppesen, Bridge Engineer.

BUREAU OF WATER TERMINAL CONSTRUCTION (TEMPORARY).

Proposals were asked for the construction of a terminal on State property at the junction of the South Branch of the Chicago River and the Chicago Drainage Canal and opened on November 28, 1933. Due to detailed negotiations between the State and the Chicago River and Indiana Railroad as to the rights of the latter at the site, considerable delay was necessitated in awarding the contracts. An agreement with the railroad was finally reached and the construction contracts awarded in May, 1934, and work started immediately but not much progress was made by the end of the year.

A detailed account of the work of this division will be found in the report of Mr. C. M. Briggs, Terminal Engineer.

ILLINOIS AND MICHIGAN CANAL.

Since the completion and opening to traffic of the Illinois Waterway, traffic on the Illinois and Michigan Canal has practically ceased.

A detailed account of the work of this division will be found in the report of Mr. M. V. Ahlvin, Assistant Chief Engineer and Mr. John A. Walter, Auditor and Collector.

BUREAU OF AUDITS.

A financial statement of the division will be found on the last page of the report and more detailed statements under the various bureaus.

ENGINEERING ACTIVITIES.

M. V. Ahlvin, *Assistant Chief Engineer.*

Waterway Activities.

During the period represented by the Seventeenth Annual Report, all bridges have been completed except the Ruby Street bridge at Joliet which probably will not be completed until the middle of 1935.

CONTRACT B-3—SUPERSTRUCTURE OF MARSEILLES CANAL BRIDGE.

This bridge was completed and opened to traffic by using the approach from the old river bridge, pending the completion of the new river spans.

CONTRACT B-8—SUPERSTRUCTURE OF SMITH'S HIGHWAY BRIDGE.

This bridge was completed and opened to traffic on July 4, 1933.

CONTRACT B-10—SUBSTRUCTURE AND APPROACHES, HILLIARD BRIDGE, OTTAWA.

The approach paving, walks, walls and ornamental railings were completed on the subgrade provided by the City of Ottawa and opened to traffic with a celebration on November 11, 1933.

CONTRACT B-11—SUPERSTRUCTURE, HILLIARD BRIDGE, OTTAWA.

During the first four months of this year the structural work was completed, the paving and pre-cast sidewalk slabs were completed and the bridge opened to traffic on November 11, 1933.

CONTRACT B-15—SUPERSTRUCTURE, MCDONOUGH STREET BRIDGE.

This bridge was completed and opened for temporary traffic in the late fall of 1933 pending the paving of the approaches in the spring of 1934.

CONTRACT B-16—MCDONOUGH STREET BRIDGE APPROACHES.

This contract was advertised in August and bids opened on September 20, 1933. A canvass of bids is appended. The contract was let to the lowest bidder, the Powers-Thompson Construction Company of Joliet, and carried out successfully.

By order of the Director, retaining walls on Water Street were included in this contract.

It was decided that the paving should be deferred until the spring months of 1934 pending a decision of the Chicago, Ottawa and Peoria Electric Ry. to abandon service.

This petition was granted the railway and their tracks were removed from the approaches and the paving completed, opening the McDonough Street bridge permanently in April, 1934.

CONTRACT B-17A—RUBY STREET BRIDGE SUBSTRUCTURE.

This contract was advertised in November and bids were opened on December 5, 1933. A canvass of bids is appended. This contract was awarded to the lowest bidder the Powers-Thompson Construction Company of Joliet and work started in January, 1934. The combination counterweight pit and abutment on the west side and the east abutment were practically completed by June 30, 1934. Work had been started on the cofferdam for the east counterweight pit.

CONTRACT B-17B—FABRICATION OF METAL WORK, RUBY ST. BRIDGE.

This contract was advertised in November and bids were opened on December 5, 1933. A canvass of bids is appended. These bids were rejected and the work awarded under Contract B-17D.

CONTRACT B-17C—ERECTION OF SUPERSTRUCTURE, RUBY ST. BRIDGE.

This contract was advertised in November and bids were opened on December 5, 1933. A canvass of bids is appended. These bids were rejected and the work awarded under Contract B-17D.

CONTRACT B-17D—SUPERSTRUCTURE, RUBY ST. BRIDGE.

This contract was advertised in November and bids were opened on December 5, 1933. A canvass of bids is appended. This contract was awarded to the lowest bidder the Milwaukee Bridge Company, 1400 34th Street, Milwaukee, Wisconsin, and shop work of fabrication of the anchorages started at once.

No erection of superstructure steel had been started on June 30, 1934.

CONTRACT B-17E—SUB AND SUPERSTRUCTURES, RUBY STREET BRIDGE.

This contract was advertised in November and bids opened on December 5, 1933. A canvass of bids is appended. These bids were rejected and the work awarded under Contracts B-17A and B-17D.

CONTRACT B-19—OPERATORS' HOUSES.

The operator's house for the McDonough Street bridge was completed under this contract and ready for use in the late fall of 1933.

CONTRACT B-20—SUPERSTRUCTURE—ILLINOIS RIVER BRIDGE AT MARSEILLES.

This contract was finished during the first part of this period and the bridge was opened for traffic on September 15, 1933, at which time the entire Marseilles unit, including the canal span went into permanent service.

CONTRACT B-21—MISCELLANEOUS ELECTRICAL WORK—JOLIET AND SMITH'S BRIDGES.

This work was advertised in August and bids opened on September 20, 1933. A canvass of bids is appended. This contract was awarded to the lowest bidder, the Wadeford Electric Company, and was carried out and completed successfully.

CONTRACT B-24—REMOVAL OF LASALLE STREET BRIDGE, OTTAWA.

This work was advertised in September and bids opened on October 18, 1933. A canvass of bids is appended. This contract was awarded to the lowest bidder, the St. Clair Construction Company of Pittsburgh, Pa. The channel span was dismantled by November 15 to allow a government dredge through this opening, and the balance of the work of dismantling was completed during the winter months. The piers were removed in the early spring, completing this contract.

CONTRACT B-25—VAULTED SIDEWALKS—JEFFERSON AND CASS STREETS, JOLIET.

This contract was advertised in November and bids opened on December 5, 1933. A canvass of bids is appended. This contract was awarded to the lowest bidder, the West Englewood Construction and Supply Company of Chicago, Illinois. Work was started in January and the contract completed on March 20, 1934.

DAMAGE CLAIMS.

Damage claims totaling $843,114.06 have been filed with this division for settlement. These damage claims are the result of the change in street grades at Cass Street, Jefferson Street and McDonough Street bridge approaches.

The properties at Jackson Street adjoining the new bridge and on the grade belong to either the State, Public Service Company of Northern Illinois or the Sanitary District of Chicago, on which no claims were made.

Of the total claims of $843,114.06 made, $415,191.97 have been settled for $166,946.69 as shown in the following table:

Claimant	*Amt. of Claim*	*Settlement*	*Date*
Adler, J. C.	$146,598.45	$ 44,000.00	12/15/32
Baston, Arthur	3,000.00	1,000.00	11/24/33
Bray, John F. et al	18,746.00	11,000.00	11/19/32
Broman, Hugo	25,000.00	8,250.00	12/20/32
Chicago & Illinois Valley Railroad Company	5,452.86	5,452.86	10/3/32
Chicago & Joliet Railway Company	31,938.35	30,693.83	1/4/33
Herbst, Mrs. Emma	6,146.00	2,300.00	12/17/32
Samios, John	13,962.50	11,000.00	11/18/32
Schmitz Bros.	29,134.81	15,000.00	6/8/32
Wilcox Bros.	112,932.00	33,000.00	1/7/33
Wolfberg, F. J.	16,987.00	3,750.00	12/2/32
Woods. Mrs. Isadore	5,294.00	1,500.00	7/—/32
Totals	$415,191.97	$166,946.69	

This leaves total claims of $427,922.09 yet to be settled for which this division has offered $51,703.00.

The economic conditions in general have made the settlement of these claims very difficult in that it is hard for an owner to realize that his property has depreciated considerably in value in such a short period of time due solely to economic conditions, and he naturally charges the entire depreciation to the loss in value due to change in grade.

BARGE TERMINAL.

CONTRACT T-1a—PILING AND DOCK.

This contract was advertised in November and bids opened on November 28, 1933. A canvass of bids is appended. This contract was awarded under Plan ''A'' to the lowest bidder, Mackie, Thompson, Tamm Company of Chicago. Work was not commenced on this contract until May 15, 1934, pending an adjustment in location and size, subject to an agreement with the C. R. & I. R. R.

CONTRACT T-1b—SUBSTRUCTURE.

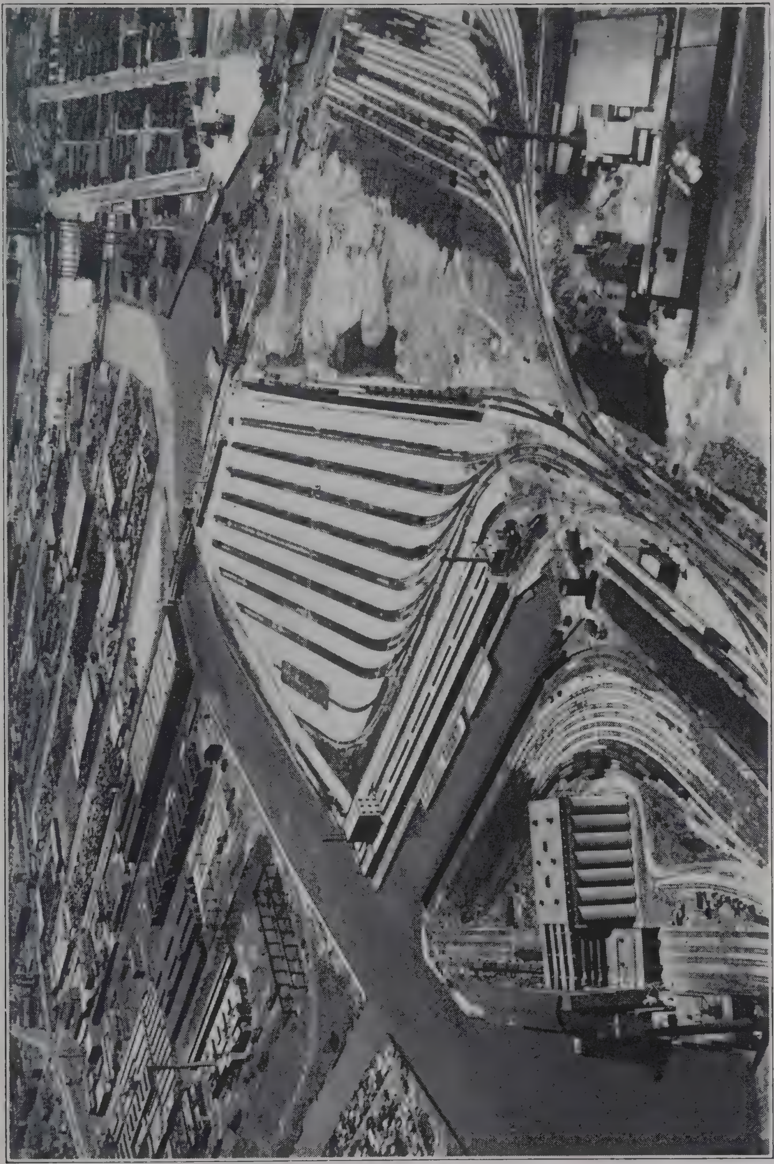
This contract was advertised in November and bids opened on November 28, 1933. A canvass of bids is appended. This contract was awarded under Plan ''A'' to the lowest bidder, the E. W. Sproul Construction Company of Chicago, Illinois. Work under this contract was delayed for the same reason that T-1a was delayed and did not commence until July 1, 1934.

CONTRACT T-1c—SUPERSTRUCTURE.

This contract was advertised in November and bids opened on November 28, 1933. A canvass of bids is appended. This contract was awarded under Plan "A" with the deduction of three bays to the lowest bidder, the John E. Ericsson Company of Chicago. Work has not yet been commenced on this contract.

CONTRACT T-1d—RAILROAD TRACK CHANGES.

This contract was advertised in November and bids opened on November 28, 1933. A canvass of bids is appended. This contract was awarded under Plan ''A'' to the lowest bidder, the Thos. M. Madden Company of Chicago. Work on this contract was started during May, 1934.



View showing Terminal location and Santa Fe Elevator.

Work started on Barge Terminal showing the reconstruction of old dock wall.

TABLE NO. 1
CONTRACT B16—McDONOUGH ST. BRIDGE APPROACHES

Canvass of Bids Received: September 20, 1933

Item No.	Item	Unit	Quantities	Powers-Thompson Construction Co. Joliet, Ill.		Hanson Bros. Co. 127 N. Dearborn Chicago		Jaicks Brothers 400 W. Madison Chicago	
				Price	Amount	Price	Amount	Price	Amount
1	Rock Excavation	Cu. Yds.	100	$2.00	$200.00	$2.50	$250.00	$5.00	$500.00
2	Earth Excavation	Cu. Yds.	500	.50	250.00	1.50	750.00	1.00	500.00
3	Pavement Removed	Sq. Yds.	1,400	.25	350.00	.50	700.00	.95	1,330.00
4	New Embankment	Cu. Yds.	6,000	.55	3,300.00	.85	5,100.00	1.05	6,300.00
5	Concrete	Cu. Yds.	200	17.00	3,400.00	13.00	2,600.00	33.00	6,600.00
6									
7	Hydrated Lime	Bag.	100	1.00	100.00	1.00	100.00	.80	80.00
8	Reinforcing Steel	Lbs.	20,000	.03.5	700.00	.03	600.00	.04	800.00
9	Reinforced Concrete Slab	Sq. Yds.	70	3.50	245.00	2.00	140.00	2.60	182.00
10	Concrete Pavement	Sq. Yds.	2,300	1.70	3,910,00	1.80	4,140.00	1.83	4,209.00
11	Concrete Sidewalk	Sq. Ft.	6,500	.18	1,170,00	.22	1,430.00	.33	2,145.00
12	Curb & Gutter	Lin. Ft.	1,100	.80	880.00	.60	660.00	.89	979.00
13	Gravel Surfacing	Sq. Yds.	800	.50	400.00	.30	240.00	.55	440.00
14	8 inch Vitrified Pipe	Lin. Ft.	50	1.75	87.50	.40	20.00	1.75	87.50
15	Iron Catch Basin Inlet	Units.	8	12.50	100.00	20.00	160.00	25.00	200.00
16	Catch Basin	Units.	2	60.00	120.00	100.00	200.00	75.00	150.00
17	Catch Basin and Manhole raised	Units.	9	25.00	225.00	40.00	360.00	15.00	135.00
18	Water Manhole raised	Units.	2	25.00	50.00	20.00	40.00	15.00	30.00
19	Fire Hydrant raised	Units.	1	25.00	25.00	40.00	40.00	50.00	50.00
20	Copper Pipe	Lin. Ft.	400	1.00	400.00	1.10	440.00	1.09	436.00
21	Water Meter	Unit.	1	50.00	50.00	75.00	75.00	75.00	75.00
22	Wrought Steel Pipe	Lin. Ft.	300	1.00	300.00	.60	180.00	1.10	330.00
23	Vault Cover	Unit.	1	100.00	100.00	50.00	50.00	125.00	125.00
24	Sump	Unit.	1	5.00	5.00	5.00	5.00	50.00	50.00
25	Grating with Frame	Units.	1	10.00	10.00	5.00	5.00	25.00	25.00
26	Fibre Conduit	Lin. Ft.	2,200	.60	1,320.00	.60	1,320.00	1.10	2,420.00
27	Fibre Plub	Units.	50	.50	25.00	.50	25.00	.50	25.00
28	Wood Roadway Fence	Lin. Ft.	880	.90	792.00	.60	528.00	.70	616.00
29	C. & I. V. R. R. Track Insulation	Lin. Ft.	2,400	.45	1,080.00	.40	960.00	.35	840.00
30	Sheet Steel Piling	Sq. Ft.	860	1.25	1,075.00	.90	774.00	1.32	1,135.20
31	Timber Piles	Lin. Ft.	200	.50	100.00	1.50	300.00	1.55	310.00
32	Southern Pine or Douglas Fir	M. ft. B.M.	125	100.00	125.00	80.00	100.00	120.00	150.00
33	Bell Trop	Units.	3	30.00	90.00	30.00	90.00	25.00	75.00
34	Public Utilities Tunnel	Lump Sum.			925.00		1,084.00		3,600.00
		Total			21,909.50		23,466.00		34,929.70

TABLE NO. 2
CONTRACT B17-A—RUBY ST. BRIDGE SUBSTRUCTURE
Canvass of Bids Received: December 5, 1933

Item No.	Item	Unit	Quantities	Powers-Thompson Construction Co. 221 So. Chicago St. Joliet, Illinois		Michael J. McDermott & Co. 105 So. Dearborn St. Chicago		Great Lakes D& D Co. 104 So. Michigan Ave., Chicago	
				Price	Amount	Price	Amount	Price	Amount
1	Pavement or Concrete Sidewalk removed and disposed of	Square Yd.	400	$ .50	$ 200.00	$ .40	$ 160.00	$ .50	$ 200.00
2	Temporary Sewer Outlet	Lump Sum.			625.00		1,000.00		6,000.00
3	Cofferdams	Lump Sum.			24,000.00		30,000.00		96,435.00
4	Earth Excavation	Cubic Yd.	9,400	.40	3,760.00	.75	7,050.00	2.00	18,800.00
5	Rock Excavation	Cubic Yd.	5,300	3.00	15,900.00	7.00	37,100.00	5.00	26,500.00
6	Class A Concrete in Abuts & Pier	Cubic Yd.	3,600	8.10	29,160.00	8.00	28,800.00	13.50	48,600.00
7	Class X Concrete in Abuts & Pier	Cubic Yd.	3,300	8.75	28,875.00	8.00	26,400.00	14.00	46,200.00
8	Reinforcing Steel	Pound.	260,000	.04	10,400.00	.03	7,800.00	.04	10,400.00
9	Sand Fill	Cubic Yd.	250	1.90	475.00	2.00	500.00	3.00	750.00
10	Rubbed Concrete Finish	Square Ft.	3,500	.10	350.00	.05	175.00	.10	350.00
11	Waterproofing of Walls	Squares.	129	6.00	774.00	2.00	258.00	10.00	1,290.00
12	White Oak Timber Fenders	M. Ft. B. M.	4	150.00	600.00	125.00	500.00	300.00	1,200.00
13	Placing each pound of substructure steel to be furnished and delivered by others	Pound.	480,000	.01	4,800.00	.0125	6,000.00	.015	7,200.00
14	Placing each pound of Substructure steel castings to be furnished and delivered by others	Pound.	15,000	.01	150.00	.0125	187.50	.02	300.00
15	Cast Iron Drain Pipes, etc.	Lump Sum.			600.00		350.00		1,500.00
16	Changes to City Water Mains	Lump Sum.			1,750.00		1,000.00		4,500.00
17	Remodeling H.E. Wood Pumping Sta.	Lump Sum.			500.00		1,200.00		2.500.00
	Total				$122,919.00		$148,480.50		$272,725.00

TABLE NO. 3

CONTRACT B17-B—RUBY ST. BRIDGE FABRICATION OF METAL WORK

Canvass of Bids Received: December 5, 1933

Item No.	Item	Unit	Quantities	Milwaukee Bridge Co. 1400 34th St. Milwaukee, Wis.		McClintic-Marshall Corp. 400 N. Michigan Ave. Chicago		Wisconsin Bridge & Iron Co. 5023 North 35th St. Milwaukee, Wis.	
				Price	Amount	Price	Amount	Price	Amount
1	Structural Steel	Pound.	3,000,000	$.0359	$107,700.00	$.0372	$111,600.00	$.038	$114,000.00
2	Structural Castings	Pound.	95,000	.0823	7,818.50	.088	8,360.00	.085	8,075.00
3	Machinery Castings	Pound.	265,000	.1025	27,162.50	.10	26,500.00	.115	30,475.00
4	Forged Steel Trunnions	Pound.	56,000	.0727	4,071.20	.085	4,760.00	.06	3,360.00
5	Forged Steel Shafts	Pound.	69,000	.0779	5,375.10	.10	6,900.00	.07	4,830.00
6	Other Forged Steel	Pound.	6,000	.2215	1,329.00	.23	1,380,00	.19	1,140.00
7	Cold Rolled Shafts	Pound.	2,000	.0955	191.00	.112	224.00	.13	260.00
8	Miscell. Mach. Parts Incl. Wrenches	Pound.	32,000	.23	7,360.00	.127	4,064.00	.16	5,120.00
9	Bronze and Brass	Pound.	14,500	.3812	5,527.40	.362	5,249.00	.44	6,380.00
10	Babbitt Metal	Pound.	1,000	.59	590.00	.71	710.00	.60	600.00
11	Ornamental Hand Railing	Linear Ft.	620	5.66	3,509.20	5.30	3,286.00	5.50	3,410.00
12	Pipe Hand Railing	Pound.	500	.25	125.00	.12	60.00	.16	80.00
			Total		$170,758.90		$173,093.00		$177,730.00

TABLE NO. 3

CONTRACT B17-B—RUBY ST. BRIDGE FABRICATION OF METAL WORK—Concluded

Canvass of Bids Received: December 5, 1933

Item No.	Item	Unit	Quantities	Independent Bridge Co. Neville Island Pittsburg, Pa.		The R. C. Mahon Co. 8650 Mt. Elliott Ave. Detroit, Mich.		American Bridge Co. 208 So. LaSalle St. Chicago	
				Price	Amount	Price	Amount	Price	Amount
1	Structural Steel	Pound.	3,000,000	$.041	$123,000.00	$.0385	$115,500.00	$.0408	$122,400.00
2	Structural Castings	Pound.	95,000	.08	7,600.00	.0783	7,438.50	.088	8,360.00
3	Machinery Castings	Pound.	265,000	.09	23,850.00	.111	29,415.00	.104	27,560.00
4	Forged Steel Trunnions	Pound.	56,000	.09	5,040.00	.084	4,704.00	.075	4,200.00
5	Forged Steel Shafts	Pound.	69,000	.09	6,210.00	.089	6,141.00	.08	5,520.00
6	Other Forged Steel	Pound.	6,000	.10	600.00	.25	1,500.00	.10	600.00
7	Cold Rolled Shafts	Pound.	2,000	.10	200.00	.131	262.00	.095	190.00
8	Miscell. Mach. Parts incl. Wrenches	Pound.	32,000	.10	3,200.00	.13	4,160.00	.105	3,360.00
9	Bronze and Brass	Pound.	14,500	.30	4,350.00	.49	7,105.00	.376	5,452.00
10	Babbitt Metal	Pound.	1,000	.50	500.00	.63	630.00	.60	600.00
11	Ornamental Hand Railing	Linear Ft.	620	7.00	4,340.00	9.00	5,580.00	6.95	4,309.00
12	Pipe Hand Railing	Pound.	500	.20	100.00	.20	100.00	.218	109.00
	Total				$178,990.00		$182,535.50		$182,660.00

Item No.	Item	Unit	Quantities	Mississippi Valley Structural Steel Co. 20 N. Wacker Drive Chicago	
				Price	Amount
1	Structural Steel	Pound.	3,000,000	$.039	$117,000.00
2	Structural Castings	Pound.	95,000	.085	8,075.00
3	Machinery Castings	Pound.	265,000	.12	31,800.00
4	Forged Steel Trunnions	Pound.	56,000	.088	4,928.00
5	Forged Steel Shafts	Pound.	69,000	.09	6,210.00
6	Other Forged Steel	Pound.	6,000	.225	1,350.00
7	Cold Rolled Shafts	Pound.	2,000	.14	280.00
8	Miscell. Mach. Parts incl. Wrenches	Pound.	32,000	.124	3,968.00
9	Bronze and Brass	Pound.	14,500	.52	7,540.00
10	Babbitt Metal	Poun.	1,000	.675	675.00
11	Ornamental Hand Railing	Linear Ft.	620	7.00	4,340.00
12	Pipe Hand Railing	Pound.	500	.14	70.00
					$186,236.00

TABLE NO. 4

CONTRACT B17-C—RUBY ST. BRIDGE ERECTION OF SUPERSTRUCTION

Canvass of Bids Received: December 5, 1935

Item No.	Item	Unit	Quantities	J. C. Theilacker Co. 5924W. Washington Blvd Milwaukee, Wis.		Great Lakes D&D Co. 104 S. Michigan Ave. Chicago	
				Price	Amount	Price	Amount
1	Structural Steel Erected	Pound.	2,520,000	$ .018	$45,360.00	$ .0175	$44,100.00
2	Structural Castings Erected	Pound.	80,000	.018	1,440.00	.015	1,200 00
3	Oper. Mach., etc. Erected	Pound.	445,000	.018	8,010.00	.015	6,675.00
4	Orn. Handrailing Erected	Linear Ft.	620	1.00	620.00	1.00	620.00
5	Pipe Railing Erected	Pound.	500	.20	100.00	.25	125.00
6	Counterweight Concrete	Cubic Yd.	650	10.00	6,500.00	15.00	9,750.00
7	Cement Grout for Cwts.	Cubic Ft.	2,700	.45	1,215.00	.70	1,890.00
8	Cwt. Metal Furn. & Placed	Pound.	1,500,000	.0075	11,250.00	.01	15,000.00
9	Timber & Lumber Furn. & Placed	M. Ft. B. M.	80	85.00	6,800.00	100.00	8,000.00
10	Treating Timber & Lumber	M. Ft. B. M.	80	11.50	920.00	25.00	2,000.00
11	Asphalt Plant Pavement Furn. & Placed	Square Ft.	1,200	2.85	3,420.00	4.00	4,800.00
12	Superstructure Concrete (Class X) except Counterweight	Cubic Yd.	800	16.95	13,560.00	14.00	11,200.00
13	Reinforcing Steel Furn. & Placed	Pound.	100,000	.035	3,500.00	.05	5,000.00
14	Rubbed Concrete Finish	Square Ft.	7,200	.07	504.00	.06	432.00
15	Wearing Surf. on Conc. Sidewalks	Square Ft.	1,600	.10	160.00	.06	96.00
16	Membrane Waterproofing of Concrete Walks and Stairway	Squares.	28	12.60	352.80	15.00	420.00
17	For furnishing and placing all Indiana Limestone Facing, etc.	Lump Sum.			790.00		1,100.00
17a	For furnishing and placing all Joliet Stone facing, etc	Lump Sum.			1,035.00		1,400.00
18	For Furnishing and placing all Indiana Limestone railings, etc.	Lump Sum.			6,575.00		9,000.00
18a	For Furnishing and placing all Joliet Stone railings, etc	Lump Sum.			9,820.00		13,000.00
19	Furn. & Placing Reducers, etc.	Lump Sum.			10,000.00		13,000.00
20	Furn. & Placing Gasoline Engs., Etc	Lump Sum.			5,900.00		7,500.00
21	Electrical Equipment	Lump Sum.			29,000.00		37,500.00
22	Trench for Submarine Cables	Linear Ft.	225	30.00	6,750.00	25.00	5,625.00
23	Miscellaneous Work	Lump Sum.			4,450.00		4,300.00
	Total Amount of Proposal (Using Indiana Limestone)				167,176.80		189,333.00
	Total Amount of Proposal (Using Joliet Stone)				170,666.80		193,633.00

TABLE NO. 5

CONTRACT B17-D—RUBY ST. BRIDGE FABRICATION AND ERECTION

Canvass of Bids Received: December 5, 1933

Item No.	Item	Unit	Quantities	Milwaukee Bridge Co. 1400 34th St. Milwaukee, Wis.		Mt. Vernon Bridge Co. Mt. Vernon, Ohio	
				Price	Amount	Price	Amount
1	Substructure Steel, Fab. & Del.	Pound.	480,000	$ .0369	$17,712.00	$ .0375	$18,000.00
2	Structural Steel, Fab. & Erected	Pound.	2,520,000	.0525	132,300.00	.0543	136,836.00
3	Structural Castings	Pound.	95,000	.0975	9,262.50	.098	9,310.00
4	Machinery Castings	Pound.	265,000	.1153	30,554.50	.12	31,800.00
5	Forged Steel Trunnions	Pound.	56,000	.0855	4,788.00	.121	6,776.00
6	Forged Steel Shafts	Pound.	69,000	.0884	6,099.60	.125	8,625.00
7	Other Forged Steel	Pound.	6,000	.23	1,380.00	.27	1,620.00
8	Cold Rolled Shafts	Pound.	2,000	.1111	222.20	.14	280.00
9	Miscell. Mach. Parts Incl. Wrenches	Pound.	32,000	.26	8,320.00	.155	4,960.00
10	Bronze and Brass	Pound.	14,500	.39	5,655.00	.42	6,090.00
11	Babbitt Metal	Pound.	1,000	.59	590.00	.79	790.00
12	Ornamental Hand Railing	Linear Ft.	620	6.17	3,825.40	7.00	4,340.00
13	Pipe Hand Railing	Pound.	500	.30	150.00	.20	100.00
14	Counterweight Concrete	Cubic Yd.	650	10.90	7,085.00	12.00	7,800.00
15	Cement Graut for CWt.	Cubic Ft.	2,700	.43	1,161.00	.55	1,485.00
16	Counterweight Metal	Pound.	1,500,000	.01	15,000.00	.01	15,000.00
17	Timber and Lumber	M. Ft. B. M.	80	72.00	5,760.00	76.00	6,080.00
18	Treating Timber & Lumber	M. Ft. B. M.	80	14.00	1,120.00	17.00	1,360.00
19	Asphalt Plant Pavement	Square Yd.	1,200	2.42	2,904.00	.315	3,780.00
20	Superstructure Concrete (Class X) except counterweight	Cubic Yd.	800	14.35	11,480.00	14.70	11,760.00
21	Reinforcing Steel	Pound.	100,000	.04	4,000.00	.042	4,200.00
22	Rubbed Concrete Finish	Square Ft.	7,200	.065	468.00	.11	792.00
23	Wearing Surf. on Conc. Sidewalk	Square Ft.	1,600	.045	72.00	.10	160.00
24	Membrane Waterproofing of Conc. Wks.	Squares.	28	8.60	240.80	10.50	294.00
25	Indiana Limestone facing and anchors for same	Lump Sum.			800.00		840.00
25a	Joliet Stone Facing & Anchors	Lump Sum.			1,045.00		1,350.00
26	Indiana Limestone Railings, etc.	Lump Sum.			6,640.00		4,950.00
26a	Joliet Stone Railings, etc.	Lump Sum.			9,800.00		9,970.00
27	Reducers, etc.	Lump Sum.			9,800.00		8,100.00
28	Gasoline Engines, etc.	Lump Sum.			5,700.00		5,990.00
29	Electric Equipment	Lump Sum.			28,700.00		29,423.00
30	Trench for Submarine Cables	Linear Ft.	225	18.00	4,050.00	15.00	3,375.00
31	Miscellaneous Work	Lump Sum.			3,500.00		3,010.00
	Total Amount of Proposal (Using Indiana Limestone)				$329,340.00		$337,926.00
	Total Amount of Proposal (using Joliet Stone)				332,745.00		343,456.00

TABLE NO. 5

CONTRACT B17-D—RUBY ST. BRIDGE FABRICATION AND ERECTION—Concluded

Canvass of Bids Received: December 5, 1933

Item No.	Item	Unit	Quantities	Mississippi Valley Structural Steel Co. 20 No. Wacker Dr. Chicago, Ill.		Wisconsin Br. & Iron Co. 5023 No. 35th St. Milwaukee, Wis.	
				Price	Amount	Price	Amount
1	Substructure Steel, Fab. & Del.	Pound.	480,000	$ .039	$18,720.00	$ .048	$23,040.00
2	Structural Steel, Fab. & Erected	Pound.	2,520,000	.055	138,600.00	.077	194,040.00
3	Structural Castings	Pound.	95,000	.098	9,310.00	.1077	10,231.50
4	Machinery Castings	Pound.	265,000	.133	35,245.00	.144	38,160.00
5	Forged Steel Trunnions	Pound.	56,000	.10	5,600.00	.0805	4,508.00
6	Forged Steel Shafts	Pound.	69,000	.102	7,038.00	.0958	6,610.20
7	Other Forged Steel	Pound.	6,000	.232	1,392.00	.2123	1,273.80
8	Cold Rolled Shafts	Pound.	2,000	.155	310.00	.1533	306.60
9	Miscell. Mach. Parts incl. Wrenches	Pound.	32,000	.135	4,320.00	.1828	5,849.60
10	Bronze and Brass	Pound.	14,500	.53	7,685.00	.4602	6,672.90
11	Babbitt Metal	Pound.	1,000	.68	680.00	.6508	650.80
12	Ornamental Hand Railing	Linear Ft.	620	8.00	4,960.00	6.20	3,844.00
13	Pipe Hand Railing	Pound.	500	.35	175.00	.2488	124.40
14	Counterweight Concrete	Cubic Yd.	650	11.10	7,215.00	17.50	11,375.00
15	Cement Grout for Cwt.	Cubic Ft.	2,700	.45	1,215.00	.60	1,620.00
16	Counterweight Metal	Pound.	1,500,000	.0095	14,250.00	.01	15,000.00
17	Timber and Lumber	M. Ft. B. M.	80	81.00	6,480.00	92.34	7,387.20
18	Treating Timber and Lumber	M. Ft. B. M.	80	14.50	1,160.00	16.50	1,320.00
19	Asphalt Plank Pavement	Square Yd.	1,200	2.35	2,820.00	3.00	3,600.00
20	Superstructure Concrete (Class X) except counterweight	Cubic Yd.	800	15.40	12,320.00	25.00	20,000.00
21	Reinforcing Steel	Pound.	100,000	.0435	4,350.00	.0419	4,190.00
22	Rubbed Concrete Finish	Square Ft.	7,200	.06	432.00	.05	360.00
23	Wearing Surf. on Conc. Sidewalk	Square Ft.	1,600	.05	80.00	.15	240.00
24	Membrane Waterproofing of Conc. Wks.	Squares.	28	9.00	252.00	6.00	168.00
25	Indiana Limestone Facing and anchors for same	Lump Sum.			850.00		642.00
25a	Joliet Stone Facing & Anchors	Lump Sum.			1,110.00		860.00
26	Indiana Limestone Railings, etc.	Lump Sum.			6,950.00		6,050.00
26a	Joliet Stone Railings, etc.	Lump Sum.			10,140.00		8,666.00
27	Reducers, etc.	Lump Sum.			10,900.00		8,993.50
28	Gasoline Engines, etc.	Lump Sum.			6,500.00		2,750.00
29	Electric Equipment	Lump Sum.			35,000.00		31,715.65
30	Trench for Submarine Cables	Linear Ft.	225	30.00	6,750.00	14.00	3,150.00
31	Miscellaneous Work	Lump Sum.			5,000.00		4,684.25
	Total Amount of Proposal (using Indiana Limestone)				$356,559.00		$418,557.40
	Total Amount of Proposal (using Joliet Stone)				360,009.00		421,391.40

TABLE NO. 6

CONTRACT B17-E—RUBY ST. BRIDGE SUB AND SUPERSTRUCTURE

Canvass of Bids Received: December 5, 1933

Item No.	Item	Unit	Quantities	Wisconsin Br. & Iron Co. 5023 N. 35th St. Milwaukee, Wis.	
				Price	Amount
1	Pavement or Concrete Sidewalk removed and disposed of	Square Yd.	400	$ .50	$ 200.00
2	Temporary Sewer Outlet	Lump Sum.			450.00
3	Cofferdams	Lump Sum.			24,000.00
4	Earth Excavation	Cubic Yd.	9,400	2.00	18,800.00
5	Rock Excavation	Cubic Yd.	5,300	8.00	42,400.00
6	Trench for Submar. Cable	Linear. Ft.	225	12.00	2,700.00
7	Class A Concrete in Abuts. & Pier	Cubic Yd.	3,600	18.00	64,800.00
8	Class X Concrete in Abuts. & Pier	Cubic Yd.	3,300	18.25	60,225.00
9	Concrete (Class X) in enclosure walls, slabs and stairways	Cubic Yd.	800	19.75	15,800.00
10	Reinforcing Steel	Pound.	360,000	.0387	13,932.00
11	Sand Fill	Cubic Yd.	250	1.90	475.00
12	Rubbed Concrete Finish	Square Ft.	10,700	.05	535,00
13	Waterproofing of Walls	Squares.	129	3.00	387.00
14	White Oak Timber Fenders	M. Ft. B. M.	4	139.00	556.00
15	Wearing Surface on Conc. Sidewalks	Square Ft.	1,600	10	160.00
16	Membrane waterproofing of concrete sidewalks and stairway	Squares.	28	5.50	154.00
17	Structural Steel	Pound.	3,000,000	.058	174,000.00
18	Structural Castings	Pound.	95,000	10.28	9.766.00
19	Machinery Castings	Pound.	265,000	13.60	36,040.00
20	Forged Steel Trunnions	Pound.	56,000	.0756	4,233.60
21	Forged Steel Shafts	Pound.	69,000	.0910	6,279.00
22	Other Forged Steel	Pound.	6,000	20.75	1,245.00
23	Cold Rolled Shafts	Pound.	2,000	14.84	296.80
24	Miscell. Mach. Parts. inc'l. Wrenches	Pound.	32,000	17.79	5,692.80
25	Bronze and Brass	Pound.	14,500	45.53	6,601.85
26	Babbitt Metal	Pound.	1,000	.646	646.00
27	Ornamental Hand Railing	Lin. Ft.	620	6.12	3,794.40
28	Pipe Hand Railing	Pound.	500	.2388	119.40
29	Counterweight Concrete	Cubic Yd.	650	15.83	10,289.50
30	Cement Grout for Counterweight	Cubic Ft.	2,700	.55	1,485.00
31	Counterweight Metal	Pound.	1,500,000	.00785	11,775.00
32	Timber and Lumber	M. Ft. B. M.	80	87.34	6,987.20
33	Treating Timber & Lumber	M. Ft. B. M.	80	16.50	1,320.00
34	Asphalt Plank Pavement	Square Yd.	1,200	2.80	3.360.00
35	Indiana Limestone facing and anchors for same	Lump Sum.			642.00

TABLE NO. 6

CONTRACT B17-E—RUBY ST. BRIDGE SUB AND SUPERSTRUCTURE—Concluded

Canvass of Bids Received: December 5, 1933

Item No.	Item	Unit	Quantities	Wisconsin Br. & Iron Co 5023 No. 35th St. Milwaukee, Wis.	
				Price	Amount
35a	Joliet Stone facing and anchor for same	Lump Sum.			$ 860.00
36	Indiana Limestone Railings and Copings including anchors	Lump Sum.			6,050.00
36a	Joliet Stone Railings and Copings including anchors	Lump Sum.			8,666.00
37	Reducers, etc. Center Lock Mach.	Lump Sum.			8,993.50
38	Gasoline Engines, etc.	Lump Sum.			2,725.00
39	Electric Equipment, etc.	Lump Sum.			31,715.65
40	Miscellaneous Work	Lump Sum.			4,684.25
41	Changes in City Water Mains	Lump Sum.			1,400.00
42	Remodeling H. E. Wood Pumping Sta.	Lump Sum.			1,230.00
	Total Amount of Proposal (using Indiana Limestone)				$586,945.95
	Total Amount of Proposal (using Joliet Stone)				589,779.95

TABLE NO. 7

CONTRACT B21—MISCELLANEOUS ELECTRICAL WORK

Canvass of Bids Received: September 20, 1933

Item No.	Item	Unit	Quantities	Wadeford Electric Co. 205 W. Wacker Drive Chicago, Ill.		A. A. Electric Co. 3125 So. 60th St. Cicero, Ill.	
				Price	Amount	Price	Amount
1	Ornamental Metal Lamp Standard	Units.	11	$ 57.00	$ 627.00	$ 67.10	$ 738.10
2	Ornamental Lamp Bracket for Trolley Pole	Units.	12	27.00	324.00	28.10	337.20
3	Ornamental Base for Trolley Pole	Units.	12	42.00	504.00	43.85	526.20
4	Ornamental Platform Crook	Units.	3	32.00	96.00	24.30	72.90
5	Casing with Rectangular Globe	Units.	6	29.00	174.00	36.80	220.80
6	Casing with Rippled Globe	Units.	17	30.00	510.00	37.50	637.50
7	Lead Covered Cable	Pound.	1,200	.242	290.40	.19	228.00
8	Parkway Cable	Pound.	200	.81	162.00	.246	49.20
9	Weather-proof Cable 2—No. 8	Pound.	150	.485	72.75	.632	94.80
10	Junction Box	Unit.	7	23.00	161.00	6.82	47.74
11	10 KVA Transformer	Unit.	2	130.00	260.00	133.00	266.00
12	Safety Switch	Unit.	4	23.00	92.00	9.90	39.60
13	Removing 16 Navigation Lights	Lump Sum.			20.00	1.00	16.00
14	Navigation Lights on Piers	Unit.	9	25.00	225.00	28.55	256.95
15	Navigation Light on House	Unit.	3	54.00	162.00	58.35	175.05
16	Portable Aluminum Ladder	Unit.	4	37.00	148.00	12.10	48.40
17	Green Nav. Lt. Smith's	Unit.	2	42.00	84.00	91.85	183.70
18	Green Nav. Lt. Marseilles	Unit.	2	42.00	84.00	91.85	183.70
19	360° Red Nav. Lt. Smith's	Unit.	4	35.00	140.00	93.30	373.20
20	180° Red. Nav. Lt. Smith's	Unit.	2	49.00	98.00	82.50	165.00
21	180° Red. Nav. Lt. Marseilles	Unit.	4	10.00	40.00	7.60	30.40
22	180° White Nav. Lt. Smith's	Unit.	6	14.00	84.00	7.60	45.60
23	Photoelectric Controller	Unit.	2	138.00	276.00	167.20	334.40
24	C. I. Meter & Switch Cabinet	Unit.	2	57.00	114.00	48.45	96.90
25	'H'' Beam Support for Cabinet	Unit.	1	23.00	23.00	24.45	24.45
26	''I'' Black Enamelled Conduit	Lin. Ft.	2,700	.288	777.60	.30	810.00
27	Rubber Covered Single No. 6 Wire	Lin. Ft.	3,600	.09	324.00	.088	5,307.80
28	Extra Flex. 2—No. 14 Cable	Lin. Ft.	200	.163	32.60	.174	34.80
29	Waterproofing Wall	Lump Sum.			20.00		9.33
30	Installing Sump Pump Motor	Lump Sum.			5.00		25.00
31	Motor Driven Blower	Lump Sum.			366.00		315.00
32	Moisture Proof Boxes	Lump Sum.			148.00		70.00
33	Magnetic Switch	Lump Sum.			76.00		69.30
34	Lighting and Wiring E. Chamber	Lump Sum.			112.00		64.50
35	Calcium Chloride	Lump Sum.			8.00		5.00
	Total				$6,640.35		$6,902.52

TABLE NO. 7

CONTRACT B21—MISCELLANEOUS ELECTRICAL WORK—Continued

Canvass of Bids Received: September 20, 1933

Item No.	Item	Unit	Quantities	John T. Mape Fairbury, Illinois		Pierce Electric Co. 367 W. Adams St. Chicago, Ill.	
				Price	Amount	Price	Amount
1	Ornamental Metal Lamp Standard	Units.	11	$60.00	$660.00	$ 61.50	$676.50
2	Ornamental Lamp Bracket for Trolley Pole	Units.	12	27.50	330.00	27.00	324.00
3	Ornamental Base for Trolley Pole	Units.	12	48.00	576.00	44.00	528.00
4	Ornamental Platform Crook	Units.	3	21.00	63.00	38.00	114.00
5	Casing with Rectangular Globe	Units.	6	36.00	196.00	32.00	192.00
6	Casing with Rippled Globe	Units.	17	37.00	629.00	33.00	561.00
7	Lead Covered Cable	Pound.	1,200	.223	267.60	.21	252.00
8	Parkway Cable	Pound.	200	.20	40.00	.45	90.00
9	Weather-proof Cable 2—No. 8	Pound.	150	.73	109.50	.53	79.50
10	Junction Box	Unit.	7	10.00	70.00	15.00	105.00
11	10 KVA Transformer	Unit.	2	150.00	300.00	118.50	237.00
12	Safety Switch	Unit.	4	10.00	40.00	11.00	44.00
13	Removing 16 Navigation Lights	Lump Sum			50.00		25.00
14	Navigation Lights on Piers	Unit.	9	30.00	270.00	39.00	351.00
15	Navigation Light on House	Unit.	3	65.00	195.00	91.00	273.00
16	Portable Aluminum Ladder	Unit.	4	25.00	100.00	24.00	96.00
17	Green Nav. Lt. Smith's	Unit.	2	90.00	180.00	100.00	200.00
18	Green Nav. Lt. Marseilles	Unit.	2	90.00	180.00	100.00	200.00
19	360° Red Nav. Lt. Smith's	Unit.	4	90.00	360.00	102.00	408.00
20	180° Red Nav. Lt. Smith's	Unit.	2	90.00	180.00	98.00	196.00
21	180° Red Nav. Lt. Marseilles	Unit.	4	12.00	48.00	9.00	36.00
22	180° White Nav. Lt. Smith's	Unit.	6	12.00	72.00	9.00	54.00
23	Photoelectric Controller	Unit.	2	140.00	280.00	143.00	286.00
24	C. I. Meter & Switch Cabinet	Unit.	2	45.00	90.00	60.00	120.00
25	"H" Beam Support for Cabinet	Unit.	1	25.00	25.00	60.00	60.00
26	"I" Black Enamelled Conduit	Lin. Ft.	2,700	.30	810.00	.16	432.00
27	Rubber Covered Single No. 6 Wire	Lin. Ft.	3,600	.045	162.00	.055	198.00
28	Extra Flex. 2—No. 14 Cable	Lin. Ft.	200	.50	30.00	.22	44.00
29	Waterproofing Wall	Lump Sum.			10.00		46.00
30	Installing Sump Pump Motor	Lump Sum.			50.00		35.00
31	Motor Driven Blower	Lump Sum.			425.00		346.00
32	Moisture Proof Boxes	Lump Sum.			100.00		225.00
33	Magnetic Switch	Lump Sum.			74.00		90.00
34	Lighting and Wiring E. Chamber	Lump Sum.			60.00		170.00
35	Calcium Chloride	Lump Sum.			25.00		4.00
	Total				$7,057.10		$7,098.00

TABLE NO. 7

CONTRACT B21—MISCELLANEOUS ELECTRICAL WORK—*Continued*

Canvass of Bids Received: September 20, 1933

Item No.	Item	Unit	Quantities	Post Electric Co. 228 N. LaSalle St. Chicago, Ill.		Divane Brothers 3826 W. Van Buren St. Chicago, Ill.	
				Price	Amount	Price	Amount
1	Ornamental Metal Lamp Standard	Units.	11	$ 62.00	$ 682.00	$ 69.82	$ 768.02
2	Ornamental Lamp Bracket for Trolley Pole	Units.	12	25.00	300.00	24.27	291.24
3	Ornamental Base for Trolley Pole	Units.	12	50.00	600.00	45.61	547.32
4	Ornamental Platform Crook	Units.	3	21.50	64.50	21.36	64.08
5	Casing with Rectangular Globe	Units.	6	35.75	214.50	36.70	220.20
6	Casing with Rippled Globe	Units.	17	37.00	629.00	29.68	504.56
7	Lead Covered Cable	Pound.	1.200	.13	156.00	.268	321.60
8	Parkway Cable	Pound.	200	.50	100.00	.38	76.00
9	Weather-proof Cable 2—No. 8	Pound.	150	.40	60.00	.447	67.05
10	Junction Box	Unit.	7	10.00	70.00	39.50	276.50
11	10 KVA Transformer	Unit.	2	150.00	300.00	143.59	287.18
12	Safety Switch	Unit.	4	20.00	80.00	27.37	109.48
13	Removing 16 Navigation Lights	Lump Sum.			40.00		8.89
14	Navigation Lights on Piers	Unit.	9	30.00	270.00	27.62	248.58
15	Navigation Light on House	Unit.	3	100.00	300.00	58.88	176.64
16	Portable Aluminum Ladder	Unit.	4	35.00	140.00	31.16	124.64
17	Green Nav. Lt. Smith's	Unit.	2	110.00	220.00	86.99	173.98
18	Green Nav. Lt. Marseilles	Unit.	2	110.00	220.00	92.84	185.68
19	360° Red Nav. Lt. Smith's	Unit.	4	115.00	460.00	95.19	380.76
20	180° Red Nav. Lt. Smith's	Unit.	2	110.00	220.00	88.45	176.90
21	180° Red. Nav. Lt. Marseilles	Unit.	4	10.00	40.00	9.94	39.76
22	180° White Nav. Lt. Smith's	Unit.	6	10.00	60.00	7.34	44.04
23	Photoelectric Controller	Unit.	2	175.00	350.00	228.84	457.68
24	C. I. Meter and Switch Cabinet	Unit.	2	50.00	100.00	76.65	153.30
25	H'' Beam Support for Cabinet	Unit.	1	29.00	29.00	36.02	36.02
26	I'' Black Enamelled Conduit	Lin. Ft.	2,700	.30	810.00	.327	882.90
27	Rubber Covered Single No. 6 Wire	Lin. Ft.	3,600	.07	252.00	.05	180.00
28	Extra Flex 2—No. 14 Cable	Lin. Ft.	200	.15	30.00	.137	27.40
29	Waterproofing Wall	Lump Sum.			15.00		2.88
30	Installing Sump Pump Motor	Lump Sum.			75.00		12.79
31	Motor Driven Blower	Lump Sum.			400.00		315.96
32	Moisture Proof Boxes	Lump Sum.			160.00		287.11
33	Magnetic Switch	Lump Sum.			75.00		124.02
34	Lighting and Wiring E. Chamber	Lump Sum.			168.00		129.72
35	Calcium Chloride	Lump Sum.			10.00		1.11
	Total				$7,700.00		$7,703.99

TABLE NO. 7

CONTRACT B21—MISCELLANEOUS ELECTRICAL WORK—Continued

Canvass of Bids Received: September 20, 1933

Item No.	Item	Unit	Quantities	Richard I. Seddon 668 Cass St. Joliet, Ill.		Harmon Electric Co. 724 So. Cicero Ave., Chicago, Ill.	
				Price	Amount	Price	Amount
1	Ornamental Lamp Standard	Units.	11	$55.00	$605.00	$95.58	$1,051.38
2	Ornamental Lamp Bracket for Trolley Pole	Units.	12	25.00	300.00	31.03	372.36
3	Ornamental Base for Trolley Pole	Units.	12	42.00	504.00	74.20	890.40
4	Ornamental Platform Crook	Units.	3	22.00	66.00	51.86	155.58
5	Casing with Rectangular Globe	Units.	6	32.00	192.00	43.99	263.94
6	Casing with Rippled Globe	Units.	17	33.00	561.00	46.40	788.80
7	Lead Covered Cable	Pound.	1,200	.20	240.00	.34	408.00
8	Parkway Cable	Pound.	200	.48	96.00	.49	198.00
9	Weather-proof Cable 2—No. 8	Pound.	150	.50	75.00	.57	85.50
10	Junction Box	Unit.	7	10.00	70.00	54.81	383.67
11	10 KVA Transformer	Unit.	2	110.00	220.00	177.31	354.62
12	Safety Switch	Unit.	4	10.00	40.00	37.64	150.56
13	Removing 16 Navigation Lights	Lump Sum.		25.00	25.00		12.10
14	Navigation Lights on Piers	Unit.	9	35.00	315.00	39.30	353.70
15	Navigation Light on House	Unit.	3	77.00	231.00	78.66	235.98
16	Portable Aluminum Ladder	Unit.	4	40.00	160.00	42.29	169.16
17	Green Nav. Lt. Smith's	Unit.	2	95.00	190.00	113.89	227.78
18	Green Nav. Lt. Marseilles	Unit.	2	95.00	190.00	121.78	243.56
19	360° Red. Nav. Lt. Smith's	Unit.	4	97.00	388.00	127.63	510.52
20	180° Red Nav. Lt. Smith's	Unit.	2	92.00	184.00	118.34	236.68
21	180° Red Nav. Lt. Marseilles	Unit.	4	10.00	40.00	14.36	57.44
22	180° White Nav. Lt. Smith's	Unit.	6	10.00	60.00	10.27	61.62
23	Photoelectric Controller	Unit.	2	175.00	350.00	283.03	566.06
24	C. I. Meter & Switch Cabinet	Unit.	2	65.00	130.00	97.37	194.74
25	"H" Beam Support for Cabinet	Unit.	1	15.00	15.00	44.52	44.52
26	"I" Black Enamelled Conduit	Lin. Ft.	2,700	.50	1,350.00	.416	1,123.20
27	Rubber Covered Single No. 6 Wire	Lin. Ft.	3,600	.07	252.00	.967	241.20
28	Extra Flex 2—No. 14 Cable	Lin. Ft.	200	.15	30.00	.18	36.00
29	Waterproofing Wall	Lump Sum.			85.00		4.73
30	Installing Sump Pump Motor	Lump Sum.			75.00		19.31
31	Motor Driven Blower	Lump Sum.			360.00		476.25
32	Moisture Proof Boxes	Lump Sum.			235.00		433.99
33	Magnetic Switch	Lump Sum.			80.00		187.47
34	Lighting and Wiring E. Chamber	Lump Sum.			70.00		196.09
35	Calcium Chloride	Lump Sum.			25.00		1.67
	Total				$7,809.00		$10,736.58

TABLE NO. 8

CONTRACT B24—REMOVAL OF LA SALLE STREET BRIDGE, OTTAWA

Canvass of Bids Received: October 18, 1933

Item No.	Item	Unit	Quantities	St. Clair Construction Co. 604 Bessemer Bldg. Pittsburg, Pa.		Congress Const. Co. 506 So. Wabash Ave., Chicago		Wisconsin Br. & Iron Co. 5023 North 35th St. Milwaukee. Wis.	
				Price	Amount	Price	Amount	Price	Amount
	For removing and disposing of the Superstructure and piers of the LaSalle St. Bridge	Lump Sum.			$7,600.00		$11,950.00		$12,760.00

Item No.	Item	Unit	Quantities	Strabel Const. Co. 53 W. Jackson Blvd. Chicago		Powers-Thompson Construction Co. 221 So. Chicago St, Joliet, Ill.		Great Lakes D & D Co. 104 So. Michigan Ave. Chicago	
				Price	Amount	Price	Amount	Price	Amount
	For removing and disposing of the Superstructure and piers of the LaSalle St. Bridge	Lump Sum			$14,640.00		$16,000.00		$19,873.00

Item No.	Item	Unit	Quantities	Swords-McDougal Co. Peoria, Illinois	
				Price	Amount
	For removing and disposing of the Superstructure and piers of the LaSalle St. Bridge.	Lump Sum.			$19,875.00

TABLE NO. 9

CONTRACT T1a—CHICAGO PACKAGE FREIGHT TERMINAL

Canvass of Bids Received: November 28, 1933

Item No.	Item	Unit	Quantities	Mackie-Thompson-Tamm, Inc., 228 No. LaSalle St., Chicago, Ill.		Fitz-Simons-Connel D. & D. Co., 10 S. LaSalle St., Chicago, Ill.		Great Lakes D & D Co., 104 S. Michigan Ave., Chicago, Ill.	
				Price	Amount	Price	Amount	Price	Amount
	PLAN "A"								
1	Removal and Disposal Existing Timber Wharf	Linear Ft.	300	$4.00	$1,200.00	$8.00	$2,400.00	$14.00	$4,200.00
2	Steel Sheet Piling	Square Ft.	12,000	1.00	12,000.00	1.00	12,000.00	1.14	13,680.00
3	Timber Piling For Anchors	Linear Ft.	3,400	.40	1,360.00	.54	1,836.00	.50	1,700.00
4	Oak Strafing Timbers	M. Ft. B. M.	8	100.00	800.00	130.00	1,040.00	130.00	1,040.00
5	Timber and Lumber	M. Ft. B. M.	4	125.00	500.00	175.00	700.00	75.00	300.00
6	Metal in Rods Structural Steel, etc.	Pound.	60,000	.12	7,200.00	.08	4,800.00	.09	5,400.00
7	Timber Foundation Piling	Linear Ft.	6,000	.40	2,400.00	.50	3,000.00	.50	3,000.00
8	Metal Pile Shoes	Units.	175	1.00	175.00	1.25	218.75	1.00	175.00
	Total				$25,635.00		$25,994.75		$29,495.00
	PLAN "B"								
1	Removal and Disposal Existing Timber Wharf	Linear Ft.	650	$4.00	$2,600.00	$8.00	$5,200.00	$13.00	$8,450.00
2	Steel Sheet Piling	Square Ft.	26,000	1.00	26,000.00	1.00	26,000.00	1.10	28,600.00
3	Timber Piling For Anchors	Linear Ft.	7,200	.40	2,880.00	.54	3,888.00	.48	3,456.00
4	Oak Strafing Timbers	M. Ft. B. M.	16	100.00	1,600.00	130.00	2,080.00	130.00	2,080.00
5	Timber and Lumber	M. Ft. B. M.	8	125.00	1,000.00	175.00	1,400.00	71.00	568.00
6	Metal in Rods, Structural Steel, etc.	Pound.	130,000	.11	14,300.00	.08	10,400.00	.08	10,400.00
7	Timber Foundation Piling	Linear Ft.	4,900	.40	1,960.00	.50	2,450.00	.50	2,450.00
8	Metal Pile Shoes	Units.	150	1.00	150.00	1.25	187.50	1.00	150.00
	Total				$50,490.00		$51,605.50		$56,154.00

TABLE NO. 10

CONTRACT T1b—CHICAGO PACKAGE FREIGHT TERMINAL

Canvass of Bids Received: November 28, 1933

Item No.	Item	Unit	Quantities	E. W. Sproul Construction Co., 2001 W. Pershing Road Chicago, Ill.		Ralph Sollitt & Sons., 228 No. LaSalle St. Chicago, Ill.	
				Price	Amount	Price	Amount
	PLAN "A"						
1	Earth Excav. Above +5.5	Cu. Yd.	3,000	$0.35	$1,050.00	$0.75	$2,250.00
2	Earth Excav. Below +5.5	Cu. Yd.	2,000	1.70	3,400.00	4.25	8,500.00
3	Fill	Cu. Yd.	2,000	1.10	2,200.00	.60	1,200.00
4	Concrete in Fdn. Walls and Structures	Cu. Yd.	1,500	13.85	20,775.00	15.00	22,500.00
5	Concrete Floors on Fill	Sq. Ft.	35,000	.28	9,800.00	.183	6,405.00
6	Concrete Pavements	Sq. Yd.	2,000	2.50	5,000.00	2.616	5,832.00
7	Portland Cement	Bbls.	100	2.75	275.00	3.00	300.00
8	Hydrated Lime	100 Lb. Bag	100	1.00	100.00	1.20	120.00
9	Reinforcing Steel	Lb.	90,000	.03¼*	3,150.00	.04	3,600.00
10	Miscellaneous Iron	Lb.	25,000	.06	1,500.00	.041	1,025.00
11	Oak Bumpers	M. Ft. B. M.	2	150.00	300.00	130.00	260.00
12	Mastic Floor	Sq. Ft.	35,000	.37½	13,125.00	.39	13,650.00
	Total				$60,675.00		$65,042.00

Item No.	Item	Unit	Quantities	Michael J. McDermott 105 So. Dearborn St. Chicago, Ill.		Sill Construction Co. 520 No. Michigan Ave., Chicago, Ill.	
				Price	Amount	Price	Amount
1	Earth Excav. Above +5.5	Cu. Yd.	3,000	$0.82	$2,460.00	$0.35½*	$1,735.00
2	Earth Excav. Below +5.5	Cu. Yd.	2,000	2.39	4,780.00	.62*	1,440.00
3	Fill	Cu. Yd.	2,000	1.70	3,400.00	.353*	708.00
4	Concrete in Fdn. Walls and Structures	Cu. Yd.	1,500	15.70	23,550.00	16.06*	24,000.00
5	Concrete Floors on Fill	Sq. Ft.	35,000	.21	7,350.00	.388	13,540.00
6	Concrete Pavements	Sq. Yd.	2,000	2.55	5,100.00	3.33	6,790.00
7	Portland Cement	Bbls.	100	2.58	258.00	3.06	306.00
8	Hydrated Lime	100 Lb. Bag	100	1.10	110.00	1.88	188.00
9	Reinforcing Steel	Lb.	90,000	.04	3,600.00	.0355	3,190.00
10	Miscellaneous Iron	Lb.	25,000	.07	1,750.00	.059	1,475.00
11	Oak Bumpers	M. Ft. B. M.	2	165.00	330.00	102.50	205.00
12	Mastic Floor	Sq. Ft.	35,000	.41	14,350.00	.45	15,700.00
	Total				$67,038.00		$69,277.00 *69,073.00

*Error in Proposal.

TABLE NO. 10

CONTRACT T1b—CHICAGO PACKAGE FREIGHT TERMINAL—Continued

Canvass of Bids Received: November 28, 1933

Item No.	Item	Unit	Quantities	Tully, Costello Co., 33 No. LaSalle St., Chicago, Ill.		J. W. Snyder Co., 307 No. Michigan Ave., Chicago, Ill.		Patrick-Warren Construction Co., 228 No. LaSalle St., Chicago, Ill.	
				Price	Amount	Price	Amount	Price	Amount
	PLAN "A"								
1	Earth Excav. Above +5.5	Cu. Yd.	3,000	1.00	3,000.00	.55	1,650.00	.53¼	1,605.00
2	Earth Excav. Below +5.5	Cu. Yd.	2,000	2.00	4,000.00	3.80	7,600.00	3.40	6,800.00
3	Fill	Cu. Yd.	2,000	2.25	4,500.00	.45	900.00	.93½	1,870.00
4	Concrete in Fdn. Walls and Structures	Cu. Yd.	1,500	15.00	22,500.00	16.95	25,425.00	15.10	22,650.00
5	Concrete Floors on Fill	Sq. Ft.	35,000	.30	10,500.00	.30	10,500.00	.37½	13,125.00
6	Concrete Pavements	Sq. Yd.	2,000	3.60	7,200.00	2.67	5,340.00	3.55	7,100.00
7	Portland Cement	Bbls.	100	2.50	250.00	3.15	315.00	2.85	285.00
8	Hydrated Lime	100 Lb. Bag.	100	.90	90.00	1.25	125.00	.58	58.00
9	Reinforcing Steel	Lb.	90,000	.05	4,500.00	.038	3,420.00	.03½	3,150.00
10	Miscellaneous Iron	Lb.	25,000	.035	875.00	.10	2,500.00	.07	1,750.00
11	Oak Bumpers	M. Ft. B. M.	2	100.60	200.00	125.00	250.00	193.00	386.00
12	Mastic Floor	Sq. Ft.	35,000	.33*	*11,550.00	.40½	14,175.00	.41	14,350.00
	Total				*$69,165.00		$72,200.00		$73,129.00

Item No.	Item	Unit	Quantities	Warner Constr. Co. 173 W. Madison St. Chicago, Ill.		John M. Bransfield Co., 3525 So. Leavitt St., Chicago, Ill.	
				Price	Amount	Price	Amount
1	Earth Excav. Above +5.5	Cu. Yd.	3,000	$0.56	$1,680.00	$ .60	$1,800.00
2	Earth Excav. Below +5.5	Cu. Yd.	2,000	1.50	3,000.00	2.00	4,000.00
3	Fill	Cu. Yd.	2,000	.25	500.00	1.00	2,000.00
4	Concrete in Fdn. Walls and Structure	Cu. Yd.	1,500	16.50	24,750.00	21.00	31,500.00
5	Concrete Floors on Fill	Sq. Ft.	35,000	.27	9,450.00	.43	15,050.00
6	Concrete Pavements	Sq. Yd.	2,000	2.75	5,500.00	2.50	5,000.00
7	Portland Cement	Bbls.	100	2.80	280.00	2.25	225.00
8	Hydrated Lime	100 Lb. Bag.	100	1.00	100.00	1.00	100.00
9	Reinforcing Steel	Lb.	90,000	.036	3,240.00	.05	4,500.00
10	Miscellaneous Iron	Lb.	25,000	.07	1,750.00	.10	2,500.00
11	Oak Bumpers	M. Ft. B. M.	2	150.00	300.00	100.00	200.00
12	Mastic Floor	Sq. Ft.	35,000	.70	24,500.00	.40	14,000.00
	Total				$75,050.00		$80,875.00

*Error in Proposal.

TABLE NO. 10

CONTRACT T1b—CHICAGO PACKAGE FREIGHT TERMINAL—Continued

Canvass of Bids Received: November 28, 1933

Item No.	Item	Unit	Quantities	E. W. Sproul Construction Co. 2001 W. Pershing Road Chicago, Ill.		Ralph Sollitt & Sons., 228 No. LaSalle St., Chicago, Ill.		Michael J. McDermott 105 So. Dearborn St. Chicago, Ill.	
				Price	Amount	Price	Amount	Price	Amount
	PLAN "B"								
1	Earth Excav. Above +5.5	Cu. Yd.	2,000	$0.35	$700.00	$0.75	$1,500.00	$0.82	$1,640.00
2	Earth Excav. Below +5.5	Cu. Yd.	1,000	1.70	1,700.00	4.25	4,250.00	2.39	2,390.00
3	Fill	Cu. Yd.	1,500	1.10	1,650.00	.60	900.00	1.70	2,550.00
4	Concrete in Fdn. Walls and Structures	Cu. Yd.	500	13.85	6,925.00	15.00	7,500.00	15.70	7,850.00
5	Concrete Floors on Fill	Sq. Ft.	20,000	.28	5,600.00	.183	3,660.00	.21	4,200.00
6	Concrete Pavements	Sq. Yd.	2,500	2.25	5,625.00	2.616	6,540.00	2.55	6,375.00
7	Portland Cement	Bbls.	100	2.75	275.00	3.00	300.00	2.58	258.00
8	Hydrated Lime	100 Lb. Bag.	100	1.00	100.00	1.20	120.00	1.10	110.00
9	Reinforcing Steel	Lb.	40,000	.03¼	1,300.00	.04	1,600.00	.04	1,600.00
10	Miscellaneous Iron	Lb.	18,000	.06	1,090.00	.041	738.00	.07	1,260.00
11	Oak Bumpers	M. Ft. B. M.	3	150.00	450.00	130.00	390.00	165.00	495.00
12	Mastic Floor	Sq. Ft.	20,000	.37½	7,500.00	.39	7,800.00	.41	8,200.00
	Total				$32,905.00		$35,298.00		$36,928.00

Item No.	Item	Unit	Quantities	Patrick Warren Con. Co. 228 No. LaSalle St. Chicago, Ill.		Warner Const. Co. 173 W. Madison St., Chicago, Ill.		John M. Bransfield Co., 3525 So. Levitt St., Chicago, Ill.	
				Price	Amount	Price	Amount	Price	Amount
1	Earth Excav. Above +5.5	Cu. Yd.	2,000	$0.55	$1,100.00	$0.40	$800.00	$0.60	$1,200.00
2	Earth Excav. Below +5.5	Cu. Yd.	1,000	3.40	3,400.00	.50	500.00	2.00	2,000.00
3	Fill	Cu. Yd.	1,500	.94	1,410.00	.25	375.00	1.00	1,500.00
4	Concrete in Fdn. Walls and Structures	Cu. Yd.	500	15.75	7,875.00	18.50	3,250.00	24.50	12,250.00
5	Concrete Floors on Fill	Sq. Ft.	20,000	.37½	7,500.00	.27	5,400.00	.43	8,600.00
6	Concrete Pavements	Sq. Yd.	2,500	3.50	8,750.00	2.75	6,875.00	2.50	6,250.00
7	Portland Cement	Bbls.	100	2.85	285.00	2.80	280.00	2.25	225.00
8	Hydrated Lime	100 Lb. Bag.	100	0.58	58.00	1.00	100.00	1.00	100.00
9	Reinforcing Steel	Lb.	40,000	.03½	1,400.00	.036	1,440.00	.05	2,000.00
10	Miscellaneous Iron	Lb.	18,000	.07	1,260.00	.07	1,260.00	.10	1,800.00
11	Oak Bumpers	M. Ft. B. M.	3	193.00	579.00	150.00	450.00	100.00	300.00
12	Mastic Floor	Sq. Ft.	20,000	.41	8,200.00	.70	14,000.00	.40	8,000.00
	Total				$41,817.00		$40,930.00		$44,225.00

TABLE NO. 10
CONTRACT T1b—CHICAGO PACKAGE FREIGHT TERMINAL—Concluded
Canvass of Bids Received: November 28, 1933

Item No.	Item	Unit	Quantities	Sill Construction Co., 520 No. Michigan Ave., Chicago, Ill.		Tully Costello Co., 33 No. LaSalle St. Chicago, Ill.		J. W. Snyder Co., 307 No. Michigan Ave., Chicago, Ill.	
				Price	Amount	Price	Amount	Price	Amount
	PLAN "B"								
1	Earth Excav. Above +5.5	Cu. Yd.	2,000	$0.63	$1,260.00	$1.00	$2,000.00	$0.55	$1,100.00
2	Earth Excav. Below +5.5	Cu. Yd.	1,000	.78	780.00	2.00	2,000.00	3.80	3,800.00
3	Fill	Cu. Yd.	1,500	.36	540.00	2.25	3,375.00	.45	675.00
4	Concrete in Fdn. Walls and Structures	Cu. Yd.	500	16.05*	8,040.00	15.00	7,500.00	17.85	8,625.00
5	Concrete Floors on Fill	Sq. Ft.	20,000	.359	7,190.00	.30	6,000.00	.30	6,000.00
6	Concrete Pavements	Sq. Yd.	2,500	3.44	8,610.00	3.60	9,000.00	2.67	6,675.00
7	Portland Cement	Bbls.	100	3.11	311.00	2.50	250.00	3.15	315.00
8	Hydrated Lime	100 Lb. Bag.	100	1.92	192.00	.90	90.00	1.25	125.00
9	Reinforcing Steel	Lb.	40,000	.036	1,438.00	.05	2,000.00	.036	1,520.00
10	Miscellaneous Iron	Lb.	18,000	.06	1,078.00	.03½	630.00	.10	1,800.00
11	Oak Bumpers	M. Ft. B. M.	3	100.00	300.00	100.00	300.00	125.00	375.00
12	Mastic Floor	Sq. Ft.	20,000	.445	9,100.00	.33	6,600.00	.40½	8,100.00
	Total				$38,839.00		$39,745.00		$39,110.00

*Error in Proposal.

Correct

....
Terminal Engineer.

TABLE NO. 11

CONTRACT T1c—CHICAGO PACKAGE FREIGHT TERMINAL—*PLAN "A"*

Canvass of Bids Received November 28, 1933

Item No.	Item	Unit	Quantities	John Kinnare, Inc. 2816 Monroe St., Chicago, Ill.		Henry Bros., Co., 7300 Calumet Ave., Chicago, Ill.		JohnE. Ericson Co. 123 W. Madison St. Chicago, Ill.	
				Price	Amount	Price	Amount	Price	Amount
1	Bldg. Superstructure	Lump Sum.			$82,928.00		$88,000.00		$91,485.00
2	24'—0" Bay of Superstructure	Lump Sum.			3,200.00		5,124.00		6,500.00
3	Structural Steel	Tons.			266.00		260.00		258.00
4	Steel Per Lb. for Additions & Deductions				1.0336		.03		1.035
	Total				$82,928.00		$88,000.00		$91,485.00

Item No.	Item	Unit	Quantities	E. W. Sproul Const. Co. 2001 W. Pershing Rd. Chicago, Ill.		E. L. Archibald Co. 111 W. Washington St. Chicago, Ill.		Campbell-Lowrie Lauter Milch Corp., 400 W. Madison St. Chicago, Ill.	
				Price	Amount	Price	Amount	Price	Amount
1	Bldg. Superstructure	Lump Sum.			$95,802.00		$97,750.00		$98,982.00
2	24'—0" Bay of Superstructure	Lump Sum.			5,380.00		5,500.00		5,300.00
3	Structural Steel	Tons.			260.00		270.00		270.00
4	Steel Per Lb. For Additions & Deductions		Additions.		.035		.033		.04
	Steel Per Lb. For Additions & Deductions		Deductions.		.0325				
	Total				$95,802.00		$97,750.00		$98,982.00

TABLE NO. 11

CONTRACT T1c- CHICAGO PACKAGE FREIGHT TERMINAL—*PLAN "A"* Continued

Canvass of Bids Received November 28, 1933

Item No.	Item	Unit	Quantities	J. W. Snyder Co. 307 N. Michigan Ave. Chicago, Ill.		Patrick Warren Con. Co. 228 N. LaSalle St. Chicago, Ill.		Michael J. McDermott 105 S. Dearborn St. Chicago, Ill.	
				Price	Amount	Price	Amount	Price	Amount
1	Bldg. Superstructure	Lump Sum.			$99,419.00		$101,597.00		$102,726.00
2	24′—O″ Bay of Superstructure	Lump Sum.			7,060.00		4,558.00		7,930.00
3	Structural Steel	Tons.			260.00		276.00		258.00
4	Steel Per Lb. for Additions & Deductions				.034		.036		.04
	Total				$99,419.00		$101,597.00		$102,726.00

Item No.	Item	Unit	Quantities	Sill Const. Co. Chicago, Ill.		Warner Const. Co. 173 W. Madison St. Chicago, Ill.		Ralph Sollitt & Sons 228 N. LaSalle St. Chicago, Ill.	
				Price	Amount	Price	Amount	Price	Amount
1	Bldg. Superstructure	Lump Sum.			$105,953.00		$106,000.00		$109,500.00
2	24′—O″ Bay of Superstructure	Lump Sum.			7,890.00		5,640.00		5,249.00
3	Structural Steel	Tons.			270.00		276.00		271.00
4	Steel Per Lb. For Additions & Deductions				.035		.0365		.042
	Total				$105,953.00		$106,000.00		$109,500.00

Item No.	Item	Unit	Quantities	Tulley Costello Co. 33 N. LaSalle St. Chicago, Ill.	
				Price	Amount
1	Bldg. Superstructure	Lump Sum.			$122,000.00
2	24′—O″ Bay of Superstructure	Lump Sum.			7,000.00
3	Structural Steel	Tons.			258.00
4	Steel Per Lb. for Additions & Deductions				.05
	Total				$122,000.00

TABLE NO. 11

CONTRACT T1c—CHICAGO PACKAGE FREIGHT TERMINAL—*PLAN "B"*—Continued

Canvass of Bids Received November 28, 1933

Item No.	Item	Unit	Quantities	E. L. Archibald Co. 111 W. Washington St. Chicago, Ill.		Campbell-Lowrie Lauter Milch Corp. 400 W. Madison St. Chicago, Ill.		Warner Constr. Co. 173 W. Madison St. Chicago, Ill.	
				Price	Amount	Price	Amount	Price	Amount
	PLAN "B"								
1	Bldg. Superstructure	Lump Sum.			$77,700.00		$74,215.00		$76,065.00
2	24′—O″ Bay of Superstructure	Lump Sum.			5,500.00		5,300.00		5,420.00
3	Structural Steel	Tons.			183.00		184.00		181.00
4	Steel Per Lb. for Additions & Deductions	Pound.		.033		.04		.0365	
	Total				$77,700.00		$74,215.00		$76,065.00

Item No.	Item	Unit	Quantities	Ralph Sollitt & Sons 228 No. LaSalle St. Chicago, Ill.		Tully Costello Co. 33 No. LaSalle St. Chicago, Ill.	
				Price	Amount	Price	Amount
1	Bldg. Superstructure	Lump Sum.			$73,900.00		$98,340.00
2	24′—O″ Bay of Superstructure	Lump Sum.			5,429.00		7,000.00
3	Structural Steel	Tons.			184.00		178.00
4	Steel Per Lb. For Additions & Deductions	Pound.		.042		.05	
	Total				$73,900.00		$98,340.00

TABLE NO. 11

CONTRACT T1c—CHICAGO PACKAGE FREIGHT TERMINAL—*PLAN "B"*—Continued

Canvass of Bids Received November 28, 1933

Item No.	Item	Unit	Quantities	John Kinnare, Inc. 2816 Monroe St. Chicago, Ill.		Henry Bros. Co., 7300 Calumet Ave., Chicago, Ill.		John E. Ericsson Co. 123 W. Madison St. Chicago, Ill.	
				Price	Amount	Price	Amount	Price	Amount
	PLAN "B"								
1	Bldg. Superstructure	Lump Sum.			$63,236. 00		$69,000. 00		$69,845. 00
2	24′—0″ Bay of Superstructure	Lump Sum.			3,663. 00		5,100. 00		6,500. 00
3	Structural Steel	Tons.			182. 00		180. 00		178. 00
4	Steel Per Lb. for Additions & Deductions	Pound.		.04		.03		.0365	
	Total				$63,236. 00		$69,000. 00		$69,845. 00

Item No.	Item	Unit	Quantities	E. W. Sproul Const. Co. 2001 W. Pershing Road, Chicago, Ill.	
				Price	Amount
	PLAN "B"—Continued				
1	Bldg. Superstructure	Lump Sum.			$69,995. 00
2	24′—0″ Bay of Superstructure	Lump Sum.			5,200. 00
3	Structural Steel	Tons.			182. 00
4	Steel Per Lb. for Additions & Deductions	Pound.		.035	Additions.
4	Steel Per Lb. for Additions & Deductions	Pound.		.0325	Deductions.
	Total				$69,995. 00

TABLE NO. 11

CONTRACT T1c—CHICAGO PACKAGE FREIGHT TERMINAL—*PLAN "B"*—Concluded

Canvass of Bids Received November 28, 1933

Item No.	Item	Unit	Quantities	J. W. Snyder Company 307 No. Michigan Ave., Chicago, Ill.		Patrick Warren Con. Co., 228 No. LaSalle St. Chicago, Ill.		Michael J. McDermott 105 So. Dearborn St., Chicago, Ill.	
				Price	Amount	Price	Amount	Price	Amount
1	Bldg. Superstructure	Lump Sum.			$74,732.00		$75,600.00		$76,393.00
2	24′—0″ Bay of Superstructure	Lump Sum.			7,015.00		4,515.00		7,600.00
3	Structural Steel	Tons.			182.00		181.00		177.00
4	Steel Per Lb. For Additions & Deductions	Pound.		.034		.036		.04	
	Total				$74,732.00		$75,600.00		$76,393.00

Item No.	Item	Unit	Quantities	Sill Construction Co. 520 No. Michigan Ave., Chicago, Ill.	
				Price	Amount
1	Bldg. Superstructure	Lump Sum.			$76,836.00
2	24′—0″ Bay of Superstructure	Lump Sum.			9,400.00
3	Structural Steel	Tons.			184.00
4	Steel Per Lb. For Additions & Deductions	Pound.		.035	
	Total				$76,836.00

TABLE NO. 12

CONTRACT T1d—CHICAGO PACKAGE FREIGHT TERMINAL

Canvass of Bids Received: November 28, 1933

Item No.	Item	Unit	Quantities	Thos. M. Madden Co. 4610 Van Buren St., Chicago, Ill.		E. W. Sproul Con. Co., 2001 W. Pershing Rd., Chicago, Ill.	
				Price	Amount	Price	Amount
	PLAN "A"						
1	Removal of present tracks as shown and specified	L. Yd.	2,000	$0.40	$800.00	$0.47¼	$945.00
2	Earth Excavation, including excavated material moved and levelled on premises as designated by Engr.	Cu. Yd.	10,000	.50	5,000.00	.308	3,080.00
3	Cribbing with old ties as required by Engineer	L. F.	900	.75	675.00	1.57½	1,417.50
4	Grading Furnishing and Laying Ballast & Ties & relaying Track as specified and shown on plans	L. Yd.	1,100	4.34	4,774.00	6.65	7,315.00
5	Furnishing and Laying Ties relaying Turnouts complete as directed by Engineer	Each.	3	197.20	591.60	227.85	683.55
6	Furnishing and Laying Ties and Slipswitch complete as shown on Plans and Specified	Each.	1	485.00	485.00	1,698.90	1,698.90
7	Furnishing and installing Bumpers Complete as Specified	Each.	7	100.00	700.00	105.00	735.00
8	Shifting & Relining Present tracks as specified and directed by Engineer	L Yd.	700	0.60	420.00	.78¼	551.25
9	Removal of Old Timber Track Platform and other Buildings on the site	Lump Sum		100.00	100.00	157.50	157.50
	Total				$13,545.60		$16,583.70

*Error in Proposal.

TABLE NO. 12

CONTRACT T1d—CHICAGO PACKAGE FREIGHT TERMINAL—Continued

Canvass of Bids Received: November 28, 1933

Item No.	Item	Unit	Quantities	John M. Bransfield Co., 3525 So. Leavitt St. Chicago, Ill.		T. M. White Co., 2314 So. Damen Ave., Chicago, Ill.	
				Price	Amount	Price	Amount
	PLAN "A"						
1	Removal of Present Tracks as shown and specified	L. Yd.	2,000	$0.45	$900.00	$1.15	$2,300.00
2	Earth Excavation, including excavated material moved and Levelled on premises as designated by Engineer	Cu. Yd.	10,000	.50	5,000.00	0.45	4,500.00
3	Cribbing with Old Ties as required by Engineer	L. F.	900	1.50	1,350.00	1.15	1,035.00
4	Grading, Furnishing and Laying Ballast and Ties and Relaying Track as specified and shown on Plans	L. Yd.	1,100	6.33	6,963.00	8.00	8,800.00
5	Furnishing and Laying Ties Relaying Turnouts complete as Directed by Engineer	Each.	3	217.50	652.50	200.00	600.00
6	Furnishing and Laying Ties and Slipswitch complete as shown on Plans and Specified	Each.	1	1,617.50	1,617.50	1,525.00	1,525.00
7	Furnishing and Installing Bumpers complete as specified	Each.	7	100.00	700.00	90.00	630.00
8	Shifting and Relining Present Tracks as specified and Directed by Engineer	L. Yd.	700	.75	525.00	1.50	1,050.00
9	Removal of Old Timber Track Platform and Other Buildings on the Site	Lump Sum.		150.00	150.00	200.00	200.00
	Total				$17,858.00		$20,640.00

*Error in Proposal.

TABLE NO. 12

CONTRACT T1d—CHICAGO PACKAGE FREIGHT TERMINAL—Continued

Canvass of Bids Received: November 28, 1933

Item No.	Item	Unit	Quantities	Deckert & McDowell 53 W. Jackson Blvd., Chicago, Ill.		Warner Constr. Co., 173 W. Madison St., Chicago, Ill.	
				Price	Amount	Price	Amount
	PLAN "A"						
1	Removal of Present Tracks as shown and specified	L. Yd.	2,000	$0.60	$1,200.00	$0.36	$720.00
2	Earth Excavation, including excavated material moved and Levelled on premises as designated by Engineer	Cu. Yd.	10,000	.50	5,000.00	0.95	9,500.00
3	Cribbing with Old Ties as required by Engineer	L. F.	900	2.82	2,538.00	1.20	1,080.00
4	Grading, Furnishing and Laying Ballast and Ties and Relaying Track as specified and shown on Plans	L. Yd.	1,100	6.72	7,392.00	6.75	7,425.00
5	Furnishing and Laying Ties Relaying Turnouts complete as Directed by Engineer	Each.	3	272.00*	716.00	150.00	450.00
6	Furnishing and Laying Ties and Slipswitch complete as shown on Plans and Specified	Each.	1	2,282.00	2,282.00	1,885.00	1,885.00
7	Furnishing and Installing Bumpers complete as specified	Each.	7	110.00	770.00	90.00	630.00
8	Shifting and Relining Present Tracks as specified and Directed by Engineer	L. Yd.	700	1.20*	740.00	0.60	420.00
9	Removal of Old Timber Track Platform and Other Buildings on the Site	Lump Sum.		350.00	350.00	100.00	100.00
	Total				$20,988.00		$22,210.00

*Error in Proposal.

TABLE NO. 12

CONTRACT T1d—CHICAGO PACKAGE FREIGHT TERMINAL—Continued

Canvass of Bids Received: November 28, 1933

Item No.	Item	Unit	Quantities	Thos. M. Madden Co., 4610 Van Buren St., Chicago ,Ill.		E.W. Sproul Const. Co., 2001 W. Pershing Rd., Chicago, Ill.	
				Price	Amount	Price	Amount
	PLAN "B"						
1	Removal of Present Tracks as shown and specified	L. Yd.	2,500	$0. 40	$1,000. 00	$0. 47¼	$1,181. 25
2	Earth Excavation, including excavated material moved and Levelled on premises as designated by Engineer	Cu. Yd.	13,000	. 50	6,500. 00	0. 308	4,004. 00
3	Cribbing with Old Ties as required by Engineer	L. F.	600	. 75	450. 00	1. 57½	945. 00
4	Grading, Furnishing and Laying Ballast and Ties and Relaying Track as specified and shown on Plans	L. Yd.	1,300	4. 40	5,720. 00	6. 65	8,645. 00
5	Furnishing and Laying Ties Relaying Turnouts complete as Directed by Engineer	Each.	1	197. 20	197. 20	227. 85	227. 85
6	Furnishing and Laying Ties and Slipswitch complete as shown on Plans and Specified	Each.	1	485. 00	485. 00	1,698. 90	1,698. 90
7	Furnishing and Installing Bumpers complete as specified	Each.	7	100. 00	700. 00	105. 00	735. 00
8	Shifting and Relining Present Tracks as specified and Directed by Engineer	L. Yd.	700	0. 60	420. 00	0. 78¼	551. 25
9	Removal of Old Timber Track Platform and Other Buildings on the Site	Lump Sum.		100. 00	100. 00	157. 50	157. 50
	Total				$15,572. 20		$18,145. 75

TABLE NO. 12

CONTRACT T1d—CHICAGO PACKAGE FREIGHT TERMINAL—Continued

Canvass of Bids Received: November 28, 1933

Item No.	Item	Unit	Quantities	John M. Bransfield Co., 3525 So. Leavitt St., Chicago, Ill.		Deckert & McDowell 53 W. Jackson Blvd., Chicago, Ill.	
				Price	Amount	Price	Amount
	PLAN "B"						
1	Removal of Present Tracks as shown and specified	L. Yd.	2,500	$0.45	$1,125.00	$0.60	$1,500.00
2	Earth Excavation, including excavated material moved and Levelled on premises as designated by Engineer	Cu. Yd.	13,000	.50	6,500.00	.50	6,500.00
3	Cribbing with Old Ties as required by Engineer	L. F.	600	1.50	900.00	2.82	1,692.00
4	Grading, Furnishing and Laying Ballast and Ties and Relaying Track as specified and shown on Plans	L. Yd.	1,300	6.33	8,229.00	6.51	8,463.00
5	Furnishing and Laying Ties Relaying Turnouts complete as Directed by Engineer	Each.	1	217.50	217.50	272.00	272.00
6	Furnishing and Laying Ties and Slipswitch complete as shown on Plans and Specified	Each.	1	1,617.50	1,617.50	2,282.00	2,282.00
7	Furnishing and Installing Bumpers complete as specified	Each.	7	100.00	700.00	110.00	770.00
8	Shifting and Relining Present Tracks as specified and Directed by Engineer	L. Yd.	700	0.75	525.00	1.20	840.00
9	Removal of Old Timber Track Platform and Other Buildings on the Site	Lump Sum.		150.00	150.00	350.00	350.00
	Total				$19,964.00		*$22,660.00

TABLE NO. 12

CONTRACT T1d—CHICAGO PACKAGE FREIGHT TERMINAL—Concluded

Canvass of Bids Received: November 28, 1933

Item No.	Item	Unit	Quantities	T. M. White Co., 2314 So. Damen Ave., Chicago, Ill.		Warner Constr. Co., 173 W. Madison St. Chicago, Ill.	
				Price	Amount	Price	Amount
	PLAN "B"						
1	Removal of Present Tracks as shown and specified	L. Yd.	2,500	$1.15	$2,875.00	$0.36	$900.00
2	Earth Excavation, including excavated material moved and Levelled on premises as designated by Engineer	Cu. Yd.	13,000	0.45	5,850.00	0.81	10,530.00
3	Cribbing with Old Ties as required by Engineer	L. F.	600	1.15	690.00	1.20	720.00
4	Grading, Furnishing and Laying Ballast and Ties and Relaying Track as specified and shown on Plans	L. Yd.	1,300	8.00	10,400.00	6.75	8,775.00
5	Furnishing and Laying Ties Relaying Turnouts complete as Directed by Engineer	Each.	1	200.00	200.00	150.00	150.00
6	Furnishing and Laying Ties and Slipswitch complete as shown on Plans and Specified	Each.	1	1,525.00	1,525.00	1,885.00	1,885.00
7	Furnishing and Installing Bumpers complete as specified	Each.	7	90.00	630.00	90.00	630.00
8	Shifting and Relining Present Tracks as specified and Directed by Engineer	L. Yd.	700	1.50	1,050.00	0.60	420.00
9	Removal of Old Timber Track Platform and Other Buildings on the Site	Lump Sum.		200.00	200.00	100.00	100.00
	Total				$23,420.00		$24,110.00

*Error in Proposal.

Correct

....
Terminal Engineer.

ILLINOIS AND MICHIGAN CANAL.

A study was made as to the advisability of diverting water from the DuPage River at Channahon to supply the Illinois and Michigan Canal wholly with river water and diverting the Channahon level, which is fed from the Sanitary Channel into the tail water of the DuPage and into the DesPlaines River.

It was planned to close the waste gates located a small distance upstream from Lock No. 6 permanently. These waste gates spilled the Channahon level into the DuPage River upstream from the dam, which added pollution to the DuPage River and closing these removed this pollution.

A fixed crest spillway was planned to take the place of the waste gates, which spillway emptied into a new channel leading into the DuPage River below the dam. A towpath bridge had to be planned over this spillway and a vehicle bridge over the new spillway channel for access to the locktender's house.

The valves in the lower gates at Lock No. 6 were planned to be sealed permanently and a new lock emptying gate valve installed in the side of the lock chamber which would carry the polluted lockage water into the new spillway channel emptying into the tail-water of the DuPage River.

The old dam which originally was a rock filled crib leaked badly and it was planned to use this as a core for a new concrete spillway section fixed crest dam having a face of steel sheeting driven just upstream from the old dam. The old abutments were to be repaired and used in the new structure. A longer fixed crest concrete spillway was to be installed near the old Kankakee feeder in the Dresden level below Channahon. This too had to be supplied with a towpath bridge across the spillway as in the upper spillway. This spillway was to empty directly into the DesPlaines River, and it was designed to take care of the very rapid runoff from the bluffs just to the north of the canal.

By careful planning with Mr. Phil Frederick, Superintendent of Company State Park Camp No. 3, Civilian Conservation Corps, and the cooperation of the corps and its supervisors it was possible to build this entire project at a very small expense to the State, there being meager State funds for this purpose.

At this time this project is almost completed and an example of the very workmanlike and splendid work done by the Civilian Conservation Corps under the direction of Mr. Phil Frederick and his assistants.

BUREAU OF MAINTENANCE OF NAVIGATION.

Bridge operators for the movable bridges at Joliet had to be provided. Applicants were examined and eighteen men in all selected to man five bridges, three men on each bridge, working in eight hour shifts and three relief operators to provide relief of one day each week for each operator.

This entailed personal instruction to each man at his particular bridge and after much diligent instruction and checking the five movable spans were turned over to these new operators without a single mishap.

In addition to the operators, one electrical maintenance man, one mechanical maintenance man and chief operator and one storekeeper were employed as supervisors of all bridge operation.

An audit of lands required for the Illinois Waterway has been compiled showing the various uses to which the land has been put. In many cases more land had to be acquired than was necessary and in some cases this excess land was sold and in others it was retained and used as Parks.

The following is a summary of the detailed report which follows:

Total Acreage Acquired	
By purchase from Waterway Construction Fund	3717.59
By purchase by Federal Government	1699.86
Lands owned by the State used for Waterway	61.25
Lands donated by other political subdivisions	13.30
Total	5492.00
Acreage Sold	
From Waterway Construction Fund lands	511.87
From Federal Government	
From lands formerly owned by State	
From lands donated by other political subdivisions	
Total	511.87
Acreage Used for Waterway (Submerged)	
From Waterway Construction Fund lands	2218.08
From Federal Government lands	1689.56
From lands formerly owned by State	56.05
From lands donated by other political subdivisions	9.40
Total	3973.09
Acreage Used for Canal (Submerged)	
From Waterway Construction Fund lands	102.50
From Federal Government lands	
From lands formerly owned by State	
From lands donated by other political subdivisions	
Total	102.50
Acreage Used for Locks (Above W. L. and Submerged)	
From Waterway Construction Fund lands	50.16
From Federal Government lands	4.05
From lands formerly owned by the State	5.20
From lands donated by other political subdivisions	3.90
Total	63.31
Acreage Used for Roads	
From Waterway Construction Fund lands	9.68
From Federal Government lands	6.25
From lands formerly owned by State	
From lands donated by other political subdivisions	
Total	15.93
Acreage Remaining for Parks	
From Waterway Construction Fund lands	825.30
From Federal Government lands	
From lands formerly owned by State	
From lands donated by other political subdivisions	
Total	825.30

LANDS ACQUIRED BY PURCHASE UNDER LEGISLATIVE ACT FOR CONSTRUCTION OF THE ILLINOIS WATERWAY (In Acres)

Ref.	Sec. Twp. Range	Above W. L.	Submerged	Sold	Orig. Pur.	Remaining	Used for Waterway	Used for Locks, etc.	Used for Canal	Used for Road	Remarks
1. 1	15 — 33 — 2	8. 18	5. 77		13. 95	6. 54	4. 74	2. 67			Starved Rock Lock.
1. 2	15 — 33 — 2	34. 72	1. 86		36. 58	32. 30	. 40	3. 88			Starved Rock Lock.
1. 3	15 — 33 — 2	2. 00			2. 00	2. 00					S. Rk. Lock Site.
2. 1	22 — 33 — 2	18. 80	103. 08	8. 8	121. 88	8. 67	102. 68	1. 73			S. Rk. Lock Site.
2. 3	22 — 33 — 2		8. 00		8. 00		8. 00				S. Rk. Lock Site
7. 1	24 — 33 — 2	83. 63	249. 19	83. 63	332. 82		249. 19				Delbridge Isl.
6. 1	13 — 33 — 2	25. 30	62. 87	25. 30	88. 17		62. 87				
7. 2	24 — 33 — 2	4. 80	16. 36	4. 80	21. 16		16. 36				Near Buffalo Rk.
10. 1	19 — 33 — 2	2. 00	65. 00	2. 00	67. 00		65. 00				Delridge Isl.
4. 3	23 — 33 — 2		21. 00		21. 00		21. 00				At St. Rock Park
7. 3	24 — 33 — 2		46. 26		46. 26		46. 26				
10. 4	19 — 33 — 3	2. 00	56. 42		58. 42	2. 00	56. 42				
10. 5	19 — 33 — 3	1. 50	21. 24	1. 50	22. 74		21. 24				
13. 1	20 — 33 — 3	88. 50	99. 10	28. 50	187. 60	60. 00	99. 10				
13. 2	20 — 33 — 3	29. 00	11. 00	29. 00	40. 00		11. 00				
13. 3	20 — 33 — 3	37. 60	40. 40	37. 60	78. 00		40. 40				
15. 2	16 — 33 — 3	. 50	1. 80	. 50	2. 30		1. 80				
12. 3	17 — 33 — 3	20. 30	37. 40	20. 30	57. 70		37. 40				
16. 3	21 — 33 — 3	20. 90	42. 10	20. 90	63. 00		42. 10				Mayo Island.
16. 4	21 — 33 — 3	3. 00	13. 17		16. 17	3. 00	13. 17				Mayo Island.
18. 1	15 — 33 — 3	29. 40	9. 26		38. 66	29. 40	9. 26				Mayo Island.
19. 1	22 — 33 — 3	4. 83	4. 15		8. 98	4. 83	4. 15				Mayo Island.
20. 6	11 — 33 — 3		0. 53		0. 53		0. 53				Ottawa High School.
State Park	22 — 33 — 2		4. 7		4. 7		4. 7				Starved Rock.
Allen Park	11 — 33 — 3		1. 4		1. 4		1. 4				S. Riv. at Ottawa.
32. 15	15 — 33 — 4	6. 62			6. 62	6. 62					Bells Is.
32. 1	15 — 33 — 4	11. 73	2. 30		14. 03	6. 77	0. 92	6. 34			Mar. Lock.
32. 2	15 — 33 — 4	56. 50	37. 60		94. 10	43. 76		12. 74	37. 60		Mar. Lock.
33. 1	14 — 33 — 4	41. 22	13. 40		54. 62	41. 22			13. 40		Mar. Canal
34. 1	23 — 33 — 4	4. 36			4. 36	4. 36					Mar Canal.
33. 2	14 — 33 — 4	70. 30	18. 40		88. 70	70. 30			18. 40		Mar Canal.
34. 2	23 — 33 — 4	5. 63	1. 50		7. 13	5. 63			1. 50		Mar Canal.
35. 1	13 — 33 — 4	5. 87	7. 00		12. 87	5. 87			7. 00		Mar Canal.
36. 1	24 — 33 — 4	168. 14	19. 80		187. 94	168. 14			19. 80		Mar Canal.
38. 1	19 — 33 — 5	42. 50	3. 50		46. 00	42. 50	3. 50				Mar Canal.
100. 2	26 — 34 — 8	35. 4	13. 40		48. 80	25. 5	13. 40	9. 9			Dresden Lock.
100. 3	26 — 34 — 8	19. 50	8. 69		28. 19	18. 3	8. 69	1. 2			Dresden Lock.
104. 1–46	25 — 34 — 8	4. 0	82. 5		86. 5	4. 0	82. 5				From Pub.Ser.Co.
104. 2–45	25 — 34 — 8		9. 0		9. 0		9. 0				From Pub.Ser.Co.

LANDS ACQUIRED BY PURCHASE UNDER LEGISLATIVE ACT FOR CONSTRUCTION OF THE ILLINOIS WATERWAY (In Acres)—Continued

Ref.	Sec. Twp. Range	Above W. L.	Submerged	Sold	Orig. Pur.	Remaining	Used for Waterway	Used for Locks, etc.	Used for Canal	Used for Road	Remarks
104.3–44	25 — 34 — 8	----	29.8	----	29.8	----	29.8	----	----	----	From Pub.Ser.Co.
105.1–43	36 — 34 — 8	----	22.8	----	22.8	----	22.8	----	----	----	From Pub.Ser.Co.
105.2–42	36 — 34 — 8	13.94	37.2	13.94	51.14	----	37.2	----	----	----	From Pub.Ser.Co.
105.3–41	36 — 34 — 8	1.3	35.1	1.3	36.4	----	35.1	----	----	----	From Pub.Ser.Co.
110.1–36	30 — 34 — 9	----	2.9	----	2.9	----	2.9	----	----	----	From Pub.Ser.Co.
111.1–37	31 — 34 — 9	5.2	30.0	----	35.2	5.2	30.0	----	----	----	From Pub.Ser.Co.
111.2–40	31 — 34 — 9	4.5	3.3	----	7.8	4.46	3.3	----	----	0.04	From Pub.Ser.Co.
111.3–39	31 — 34 — 9	3.2	12.0	3.2	15.2	----	12.0	----	----	----	From Pub.Ser.Co.
111.4–38	31 — 34 — 9	9.2	50.0	9.2	59.2	----	50.0	----	----	----	From Pub.Ser.Co.
116.1–24	17 — 34 — 9	2.0	6.3	----	8.3	1.36	6.3	----	----	0.64	From Pub.Ser.Co.
116.2–25	17 — 34 — 9	0.25	0.25	----	0.5	0.25	0.25	----	----	----	From Pub.Ser.Co.
117.1–31	20 — 34 — 9	10.6	79.3	----	89.9	10.6	79.3	----	----	----	From Pub.Ser.Co.
117.2–26	20 — 34 — 9	59.8	100.0	59.8	159.8	----	100.0	----	----	----	From Pub.Ser.Co.
117.3–27	20 — 34 — 9	0.8	1.7	----	2.5	0.8	1.7	----	----	----	From Pub.Ser.Co.
117.4–30	20 — 34 — 9	0.25	3.75	----	4.0	0.25	3.75	----	----	----	From Pub.Ser.Co.
118.1–33	29 — 34 — 9	14.2	80.5	----	94.7	14.2	80.5	----	----	----	From Pub.Ser.Co.
118.2–34	29 — 34 — 9	20.6	36.8	----	57.4	20.6	36.8	----	----	----	From Pub.Ser.Co.
118.3–35	29 — 34 — 9	46.57	----	----	46.57	45.27	----	----	----	1.3	From Pub.Ser.Co.
118.4–32	29 — 34 — 9	6.5	9.2	----	15.7	6.5	9.2	----	----	----	From Pub.Ser.Co.
118.5–30	29 — 34 — 9	1.5	3.5	1.5	5.0	----	3.5	----	----	----	From Pub.Ser.Co.
119.1–34	32 — 34 — 9	18.8	19.3	8.3	38.1	9.8	19.3	----	----	0.7	From Pub.Ser.Co.
124.1–23	16 — 34 — 9	----	9.6	----	9.6	----	9.6	----	----	----	----
124.2–22	16 — 34 — 9	4.3	40.8	----	45.1	2.9	40.8	----	----	1.4	----
124.3–21	16 — 34 — 9	4.0	44.1	----	48.1	2.4	44.1	----	----	1.6	----
124.4–20	16 — 34 — 9	31.3	45.7	----	77.0	31.3	45.7	----	----	----	----
124.5–17	16 — 34 — 9	3.0	26.2	3.0	29.2	----	26.2	----	----	----	----
124.6–18	16 — 34 — 9	0.5	2.0	0.5	2.5	----	2.0	----	----	----	----
125.1–23	21 — 34 — 9	----	50.0	----	50.0	----	50.0	----	----	----	----
125.2–19	21 — 34 — 9	----	17.8	----	17.8	----	17.8	----	----	----	----
125.3–29	21 — 34 — 9	3.5	7.0	----	10.5	3.5	7.0	----	----	----	----
125.4–28	21 — 34 — 9	4.3	10.2	4.1	14.5	----	10.2	----	----	0.2	----
125.5–18	21 — 34 — 9	2.0	4.0	2.0	6.0	----	4.0	----	----	----	----
133.1–17	15 — 34 — 9	8.0	10.5	6.6	18.5	----	10.5	----	----	1.4	----
133.2–13	15 — 34 — 9	6.8	10.2	6.8	17.0	----	10.2	----	----	----	----
133.3–18	15 — 34 — 9	8.0	24.0	7.2	32.0	----	24.0	----	----	.80	----
133.4–15	15 — 34 — 9	23.2	19.6	21.8	42.8	----	19.6	----	----	1.4	----
133.5–14	15 — 34 — 9	36.5	12.5	36.5	49.0	----	12.5	----	----	----	----
133.6–16	15 — 34 — 9	3.9	7.6	3.2	11.5	0.7	7.6	----	----	----	----
137.1–8	11 — 34 — 9	----	19.8	----	19.8	----	19.8	----	----	----	W. Bank to C.L. Des Plaines R.

LANDS ACQUIRED BY PURCHASE UNDER LEGISLATIVE ACT FOR CONSTRUCTION OF THE ILLINOIS WATERWAY (In Acres)—Concluded

Ref.	Sec. Twp. Range	Above W. L.	Submerged	Sold	Orig. Pur.	Remaining	Used for Waterway	Used for Locks, etc.	Used for Canal	Used for Road	Remarks
137. 1–9	11 — 34 — 9	14. 0	27. 64	-----	41. 64	14. 0	27. 64	-----	-----	-----	-----
137. 2–10–11	11 — 34 — 9	50. 2	125. 4	13. 2	175.6	37.0	125.4	-----	-----	-----	-----
138. 1–12	14 — 34 — 9	8. 7	33. 3	2. 2	42. 0	6. 5	33. 3	-----	-----	-----	-----
148. 1–6	20 — 35 — 10	5. 3	8. 7	-----	14. 0	5. 3	4. 1	-----	4. 6	-----	Brandon Rd. Lock.
148. 2–5	20 — 35 — 10	18. 4	11. 2	-----	29. 6	10. 7	7. 6	11. 1	0. 2	-----	Brandon Rd. Lock.
148. 3–7	20 — 35 — 10	0. 2	28. 2	-----	28. 4	-----	28. 2	-----	-----	0. 2	Brandon Rd. Lock Site.
152. 1–4	21 — 35 — 10	15. 5	-----	15. 5	15.5	-----	-----	-----	-----	-----	Brandon Rd. Lock Site.
152. 2–3	21 — 35 — 10	-----	21. 96	-----	21. 96	-----	21. 96	-----	-----	-----	Brandon Rd. Lock Site.
152. 3–2	21 — 35 — 10	10. 0	-----	10. 0	10. 0	-----	-----	-----	-----	-----	Brandon Rd. Lock Site.
152. 4–1	21 — 35 — 10	19. 2	8. 0	19. 2	27. 2	-----	7. 4	0. 6	-----	-----	Brandon Rd. Lock Site.
		1388. 74	2328. 85	511. 87	3717. 59	825. 30	2218. 08	50. 16	102. 50	9. 68	

LANDS AND EASEMENTS SUPPLIED BY THE FEDERAL GOVERNMENT TO THE ILLINOIS WATERWAY (In Acres)

Ref.	Sec. Twp. Range	Above W. L.	Submerged	Sold	Orig. Pur.	Remaining	Used for Waterway	Used for Locks, etc.	Used for Canal	Used for Road	Remarks
P 3-A	22 — 33 — 2		8. 22		8. 22		8. 22				
P 4-T.A.	23 — 33 — 2		5. 67		5. 67		5. 67				
P 4-T.B.	23 — 33 — 2		1. 11		1. 11		1. 11				
P 4-T.C.	23 — 33 — 2		23. 24		23. 24		23. 24				
P 4-T.D.	23 — 33 — 2		123. 00		123. 00		123. 00				
P 4-T.E.	23 — 33 — 2		. 35		. 35		. 35				
P 4-T.F.	23 — 33 — 2		13. 00		13. 00		13. 00				
P 4-A	14 — 33 — 2		70. 86		70. 86		70. 86				
P14-A	25 — 33 — 2		13. 87		13. 87		13. 87				
P 7	19 — 33 — 3		13. 93		13. 93		13. 93				
P 8	19 — 33 — 3		49. 69		49. 69		49. 69				
P 9-A	17 — 33 — 3		19. 70		19. 70		19. 70				
P10	14 — 33 — 3		3. 46		3. 46		3. 46				
P11-A	9 — 33 — 3		. 10		. 10		. 10				
P11-B	16 — 33 — 3		4. 69		4. 69		4. 69				
P11-C	17 — 33 — 3		2. 27		2. 27		2. 27				
P11-D	17 — 33 — 3		18. 55		18. 55		18. 55				
P12	21 — 33 — 3		. 88		. 88		. 88				
P24	10-14-15-11—33—3		29. 00		29. 00		29. 00				
P26-ABC	11-15-14—33—3		12. 58		12. 58		12. 58				
P26-A	14 — 33 — 3		0. 54		0. 54		0. 54				
P 0-12	11 — 33 — 3		1. 24		1. 24		1. 24				
P 0-13	11 — 33 — 3		0. 35		. 35		. 35				
P 0-14	11 — 33 — 3		0. 15		. 15		. 15				
P 0-15	11 — 33 — 3		0. 24		. 24		. 24				
P 0-16	11 — 33 — 3		0. 13		. 13		. 13				
P 0-17	11 — 33 — 3		0. 21		. 21		. 21				
P 0-22	11 — 33 — 3		3. 62		3. 62		3. 62				Fox River
P 0-21	11 — 33 — 3		2. 84		2. 84		2. 84				Fox River
P 0-28	11 — 33 — 3		. 86		. 86		. 86				Fox River
P 0-30	12 — 33 — 3		3. 30		3. 30		3. 30				Fox River
P 0-36	12 — 33 — 3		1. 80		1. 80		1. 80				
P 0-37A	12 — 33 — 3		1. 33		1. 33		1. 33				
P 0-37B	12 — 33 — 3		2. 11		2. 11		2. 11				
P 6-A	13 — 33 — 2		3. 75		3. 75		3. 75				
P 0-32	12 — 33 — 3		2. 29		2. 29		2. 29				Fox River.
P 0-33	12 — 33 — 3		. 01		. 01		. 01				Fox River.
P 0-34	12 — 33 — 3		3. 58		3. 58		3. 58				Fox River.

LANDS AND EASEMENTS SUPPLIED BY THE FEDERAL GOVERNMENT TO THE ILLINOIS WATERWAY (In Acres)—Continued

Ref.	Sec. Twp. Range	Above W. L.	Submerged	Sold	Orig. Pur.	Remaining	Used for Waterway	Used for Locks, etc.	Used for Canal	Used for Road	Remarks
P 0-35	1 — 33 — 3		1.30		1.30		1.30				Fox River.
P 0-36	12 — 33 — 3		1.03		1.03		1.03				
P 0-40A	12 — 33 — 3		2.79		2.79		2.79				
P 0-40B	12 — 33 — 3		.50		.50		.50				
P 0-41	12 — 33 — 3		5.28		5.28		5.28				
P 27	12 — 33 — 3		10.00		10.00		10.00				
P28-A.B.	12 — 33 — 3		2.32		2.32		2.32				
P28-C	12 — 33 — 3		7.99		7.99		7.99				
P29	12 — 33 — 3		12.76		12.76		12.76				
P30	7 — 33 — 4		2.42		2.42		2.42				
P31-A	7&18 — 33 — 4		22.45		22.45		22.45				
P31-B	7 — 33 — 4		1.46		1.46		1.46				
P32-A	8 — 33 — 4		.63		.63		.63				
P32-B	17 — 33 — 4		.63		.63		.63				
P34-A	17 — 33 — 4		1.62		1.62		1.62				
P34-B	8 — 33 — 4		1.32		1.32		1.32				
P35	16 — 33 — 4		2.37		2.37		2.37				
P35-E.A.	24 — 33 — 4		4.05		4.05			4.05			
P35-E.B.	19 — 33 — 5		1.44		1.44		1.44				
P35-F	19 — 33 — 5		.25		.25		.25				
P35-H	19 — 33 — 5		.15		.15		.15				
P35-J	19 — 33 — 5		.13		.13		.13				
P35-K	19 — 33 — 5		.12		.12		.12				
P35-L.A.	19 — 33 — 5		1.72		1.72		1.72				
P35-L.B.	19 — 33 — 5		.62		.62		.62				
P36-A	19 — 33 — 5		3.20		3.20		3.20				
P36-B	19 — 33 — 5		2.84		2.84		2.84				
P37	19 — 33 — 5		13.34		13.34		13.34				
P37-A	19 — 33 — 5		39.62		39.62		39.62				Ballards Island.
P38	19 — 33 — 5		18.94		18.94		18.94				
P39	19&20 — 33 — 5		46.43		46.43		46.43				
P40-A	20 — 33 — 5		.51		.51		.51				
P40-B	20 — 33 — 5		19.51		19.51		19.51				
P41	29 — 33 — 5		2.28		2.28		2.28				
P42	21 — 33 — 5		8.47		8.47		8.47				
P43	27 — 33 — 5		3.05		3.05		3.05				
P44	26 — 33 — 5		3.29		3.29		3.29				
P44-A	26 — 33 — 5		.98		.98		.98				
P42-A	21 — 33 — 5		2.44		2.44		2.44				

LANDS AND EASEMENTS SUPPLIED BY THE FEDERAL GOVERNMENT TO THE ILLINOIS WATERWAY (In Acres)—Continued

Ref.	Sec. Twp. Range	Above W. L.	Submerged	Sold	Orig. Pur.	Remaining	Used for Waterway	Used for Locks, etc.	Used for Canal	Used for Road	Remarks
P48-A	16 — 33 — 6		0. 34		0. 34		0. 34				
P48	21 — 33 — 6		2. 11		2. 11		2. 11				
P49	16 — 33 — 6		8. 35		8. 35		8. 35				
P50	16 — 33 — 6		7. 47		7. 47		7. 47				
P53	13 — 33 — 6		5. 89		5. 89		5. 89				
P53-A	13 — 33 — 6		1. 87		1. 87		1. 87				
P54-A	7 — 33 — 7		4. 18		4. 18		4. 18				
P58	8 — 33 — 7		8. 08		8. 08		8. 08				
P69-A	26 — 34 — 8	2. 15			2. 15					2. 15	
P69-B	35 — 34 — 8	1. 07			1. 07					1. 07	
PK71	36 — 34 — 8		8. 35		8. 35		8. 35				
PK71A-A	25 — 34 — 8		2. 18		2. 18		2. 18				
PK71A-B	25 — 34 — 8		5. 02		5. 02		5. 02				
PK71A-C	25 — 34 — 8		0. 92		0. 92		0. 92				
PK72-A	36 — 34 — 8		20. 46		20. 46		20. 46				
PK72-B	36 — 34 — 8		4. 18		4. 18		4. 18				
PK73-A	1 — 33 — 8		53. 47		53. 47		53. 47				
PK73-B	1 — 33 — 8		0. 65		0. 65		0. 65				
PK73-C	1 — 33 — 8		13. 93		13. 93		13. 93				
PK73-D	1 — 33 — 8		9. 14		9. 14		9. 14				
PK73-E	1 — 33 — 8		2. 03		2. 03		2. 03				
PK73A	2 — 33 — 8		2. 96		2. 96		2. 96				
PK73B	12 — 33 — 8		2. 04		2. 04		2. 04				
PK76	6 — 33 — 9		12. 30		12. 30		12. 30				
PK77	7 — 33 — 9		19. 56		19. 56		19. 56				
PK82	7 — 33 — 9		5. 89		5. 89		5. 89				
PK83-A	7 — 33 — 9		0. 46		0. 46		0. 46				
PK83-B	7 — 33 — 9		1. 57		1. 57		1. 57				
PK83-C	7 — 33 — 9		69. 00		69. 00		69. 00				
PK83-D	7 — 33 — 9		4. 29		4. 29		4. 29				
PK83-E	6 — 33 — 9		5. 89		5. 89		5. 89				
PK83F	6 — 33 — 9		1. 85		1. 85		1. 85				
PK85-A	8 — 33 — 9		1. 22		1. 22		1. 22				
PK86	8 — 33 — 9		1. 63		1. 63		1. 63				
PK87	9 — 33 — 9		0. 54		0. 54		0. 54				
PK88-A	36 — 34 — 9		150. 33		150. 33		150. 33				
PK88-B	1 — 33 — 8		2. 15		2. 15		2. 15				
PK88-C	1 — 33 — 8		3. 69		3. 69		3. 69				
PK88-D	1 — 33 — 8		0. 64		0. 64		0. 64				

LANDS AND EASEMENTS SUPPLIED BY THE FEDERAL GOVERNMENT TO THE ILLINOIS WATERWAY (In Acres) Concluded

Ref.	Sec. Twp. Range	Above W. L.	Submerged	Sold	Orig. Pur.	Remaining	Used for Waterway	Used for Locks, etc.	Used for Canal	Used for Road	Remarks
PK89	1 — 33 — 8		22. 11		22. 11		22. 11				
PK89–A	1 — 33 — 8		7. 89		7. 89		7. 89				
PK90	6 — 33 — 9		16. 19		16. 19		16. 19				
PK91	6 — 33 — 9		1. 24		1. 24		1. 24				
PK92	6 — 33 — 9		5. 21		5. 21		5. 21				
PK93	6 — 33 — 9		1. 51		1. 51		1. 51				
PK94	5 — 33 — 9		38. 04		38. 04		38. 04				
PK95	5 — 33 — 9		15. 20		15. 20		15. 20				
PK96–A	5 — 33 — 9		10. 41		10. 41		10. 41				
PK96–B	8 — 33 — 9		6. 68		6. 68		6. 68				
PK96–C	8 — 33 — 9		0. 61		0. 61		0. 61				
PK97	8 — 33 — 9		1. 22		1. 22		1. 22				
PK98	8 — 33 — 9		35. 30		35. 30		35. 30				
PD98–A	36 — 34 — 8		1. 49		1. 49		1. 49				
PD99–A	32 — 34 — 9		35. 99		35. 99		35. 99				
PD99–B	32 — 34 — 9		8. 64		8. 64		8. 64				
PD100–A	32 — 34 — 9		2. 79		2. 79		2. 79				
PD100–B	32 — 34 — 9		32. 87		32. 87		32. 87				
PD101	32 — 34 — 9		5. 83		5. 83		5. 83				
PD102	32 — 34 — 9		114. 39		114. 39		114. 39				
PD103–A	32 — 34 — 9		32. 59		32. 59		32. 59				
PD103–B	32 — 34 — 9		17. 60		17. 60		17. 60				
PD103A	33 — 34 — 9		22. 32		22. 32		22. 32				
PD104	33 — 34 — 9		16. 39		16. 39		16. 39				
PD105	33 — 34 — 9		5. 28		5. 28		5. 28				
PD107	—5 — 33 — 9										
ABC	—6 — 33 — 9	1. 40	12. 39		13. 79		12. 39			1. 40	
PD108	—5 — 33 — 9										
ABC	—6 — 33 — 9	1. 63	13. 20		14. 83		13. 20			1. 63	
PD109	5 — 33 — 9		7. 51		7. 51		7. 51				
PD110	5 — 33 — 9		13. 19		13. 19		13. 19				
PD111–A–B-C-D-E	15 — 34 — 9		27. 01		27. 01		27. 01				
PD115	16 — 34 — 9		1. 96		1. 96		1. 96				
PD114–A	14 — 34 — 9		9. 89		9. 89		9. 89				
PD114–B	14 — 34 — 9		12. 84		12. 84		12. 84				
Walls Jackson to Ruby Sts.			. 43		. 43		. 43				
		6. 25	1693. 61		1699. 86		1689. 56	4. 05		6. 25	

LANDS ACQUIRED FROM THE I. & M. CANAL FOR CONSTRUCTION OF THE ILLINOIS WATERWAY (In Acres)

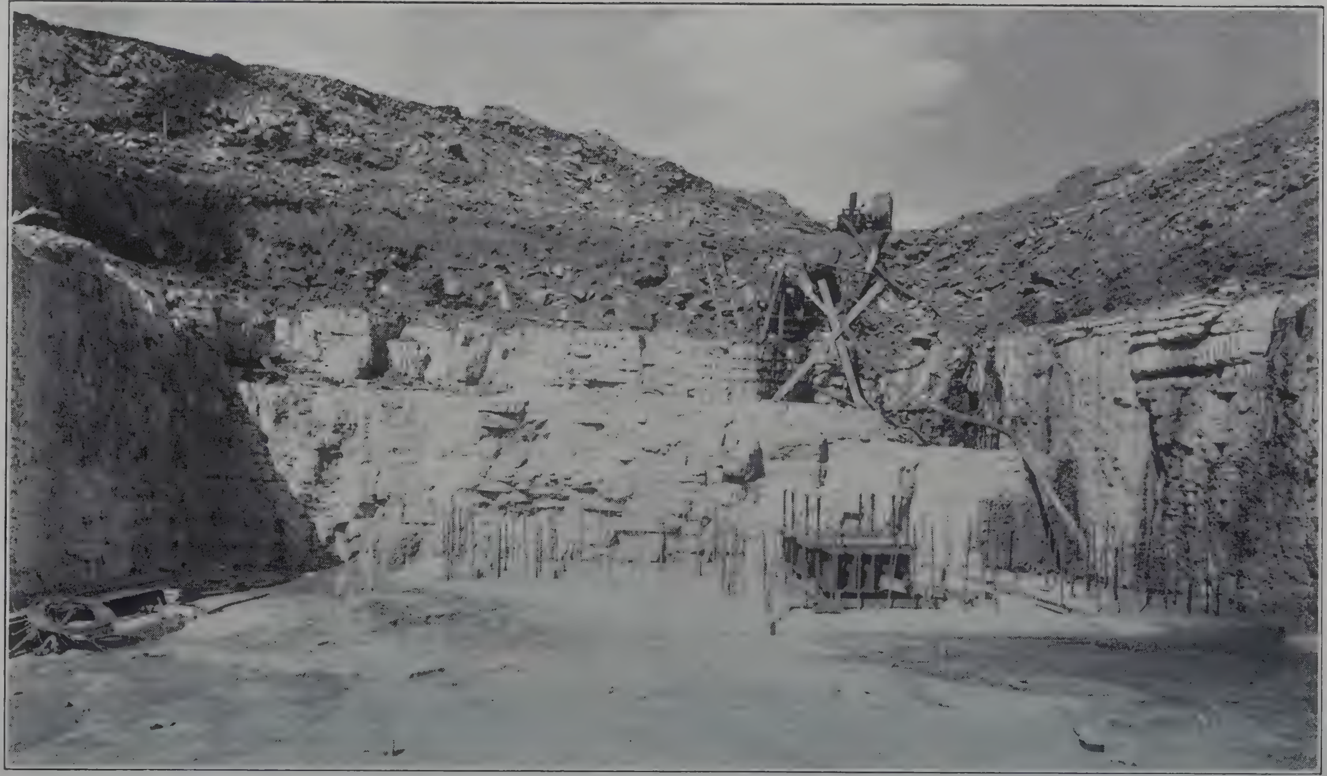
Ref.	Sec. Twp. Range	Above W. L.	Submerged	Sold	Orig. Pur.	Remaining	Used for Waterway	Used for Locks, etc.	Used for Canal	Used for Road	Remarks
20. 5	11 — 33 — 3		0. 40		0. 40		0. 40				N.F.P. Co.
20. 51	11 — 33 — 3		0. 60		0. 60		0. 60				Ottawa City Hall.
I&M Canal	25 — 34 — 8		4. 8		4. 8		4. 8				From Pub.Ser.Co.
I&M Canal	26 — 34 — 8		4. 0		4. 0		4. 0				From Pub.Ser.Co.
I&M Canal	36 — 34 — 8		0. 10		0. 10		0. 10				From Pub.Ser.Co.
I&M Canal	30 — 34 — 9		0. 83		0. 83		0. 83				From Pub.Ser.Co.
I&M Canal	31 — 34 — 9		5. 0		5. 0		5. 0				
I&M Canal	20 — 34 — 9		2. 3		2. 3		2. 3				From Pub.Ser.Co.
I&M Canal	20 — 34 — 9		. 32		0. 32		0. 32				
I&M Canal	29 — 34 — 9		5. 2		5. 2		5. 2				
I&M Canal	20 — 35 — 10	0. 5	4. 8		5. 3		4. 8	0. 5			
I&M Canal	21 — 35 — 10	0. 4	4. 5		4. 9		4. 5	0. 4			B.Rd. Lock Site.
I&M Canal	16 — 35 — 10	2. 9	17. 0		19. 9		17. 0	2. 9			Thru Joliet, W. Side.
I&M Canal	9 — 35 — 10	1. 4	6. 2		7. 6		6. 2	1. 4			Thru Joliet, W. Side.
		5. 2	56. 05		61. 25		56. 05	5. 2			

LANDS ACQUIRED FROM THE SANITARY DISTRICT OF CHICAGO FOR CONSTRUCTION OF THE ILLINOIS WATERWAY (In Acres)

Ref.	Sec. Twp. Range	Above W. L.	Submerged	Sold	Orig. Pur.	Remaining	Used for Waterway	Used for Locks, etc.	Used for Canal	Used for Road	Remarks
151. 1	16 — 35 — 10	2. 6	5. 9		8. 5		5. 9	2. 6			Thru Joliet, E. Side.
150. 2	9 — 35 — 10	1. 3	0. 7		2. 0		0. 7	1. 3			Thru Joliet. E. Side.
152. 5	16 — 35 — 10		0. 2		0. 2		0. 2				B. Rd. Lock Site.
152. 6	16 — 35 — 10		2. 6		2 6		2. 6				B. Rd. Lock Site.
		3. 9	9. 4		13. 3		9. 4	3. 9			

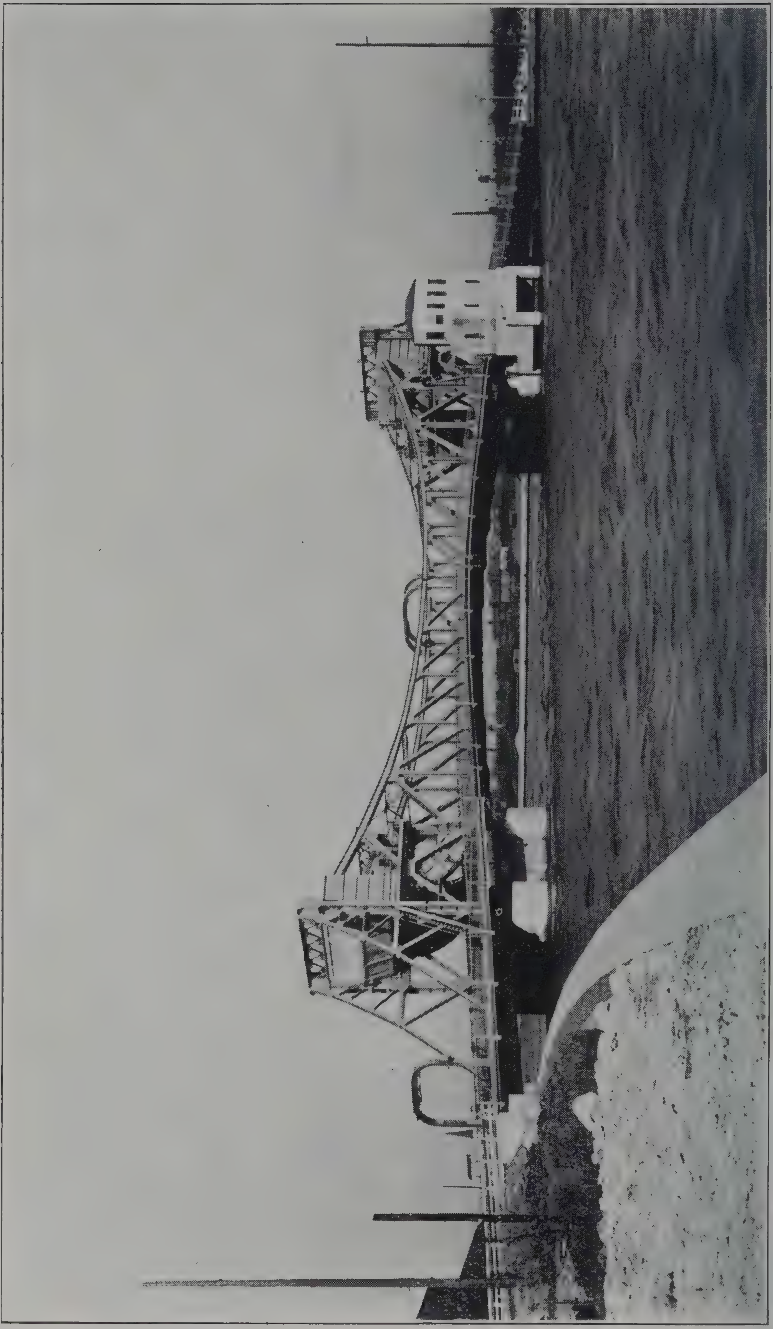
ILLINOIS WATERWAY BRIDGES.

ILLUSTRATIONS.

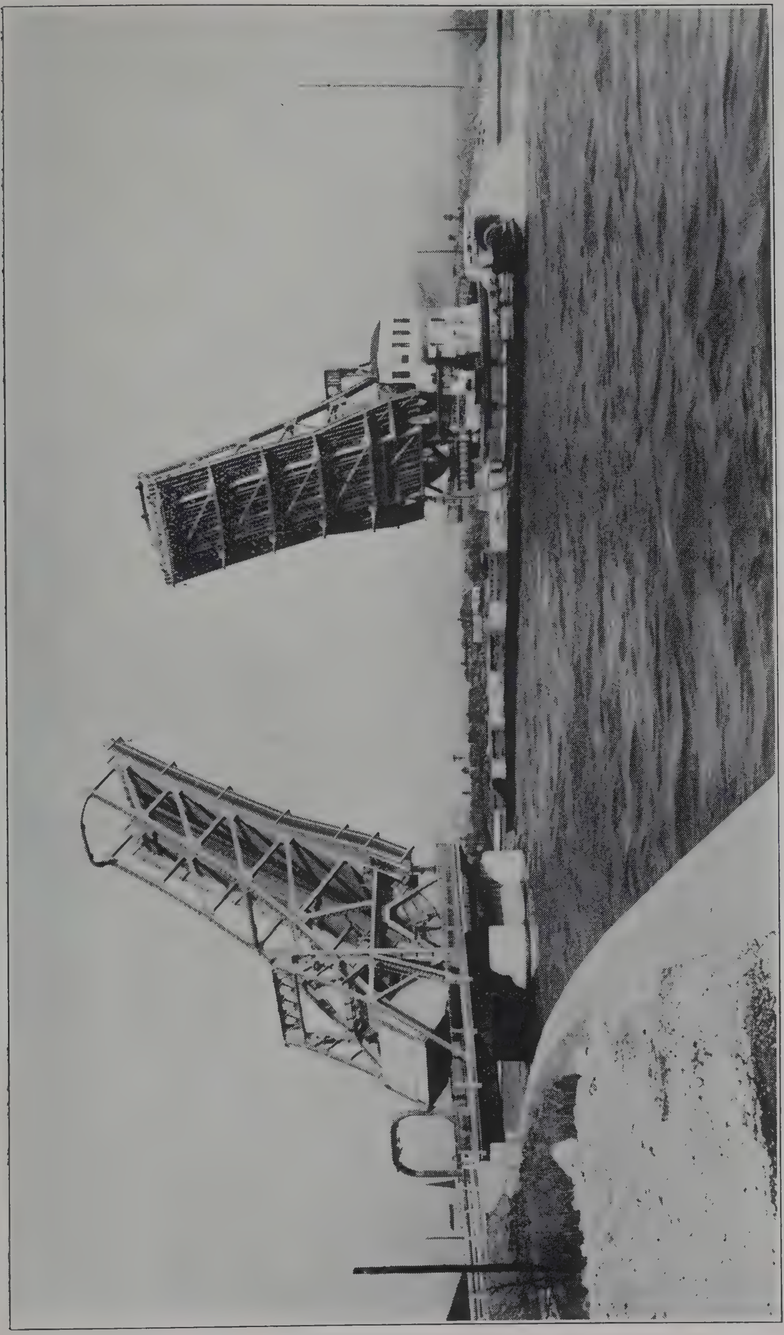


Ruby Street Bridge, Joliet, excavation for west pit. (April 18, 1934.)

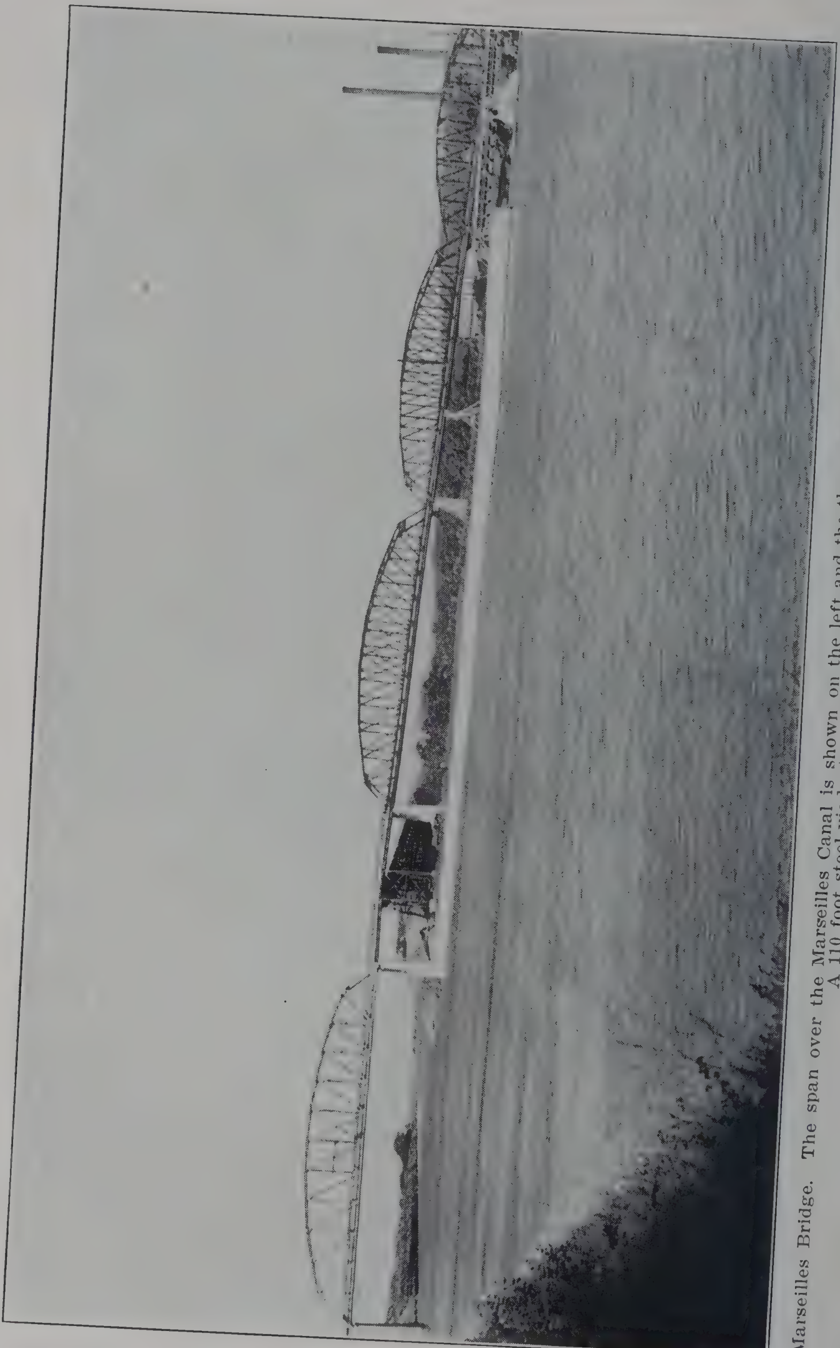
Ruby Street Bridge, Joliet, inside of west pit. (June 28, 1934.)



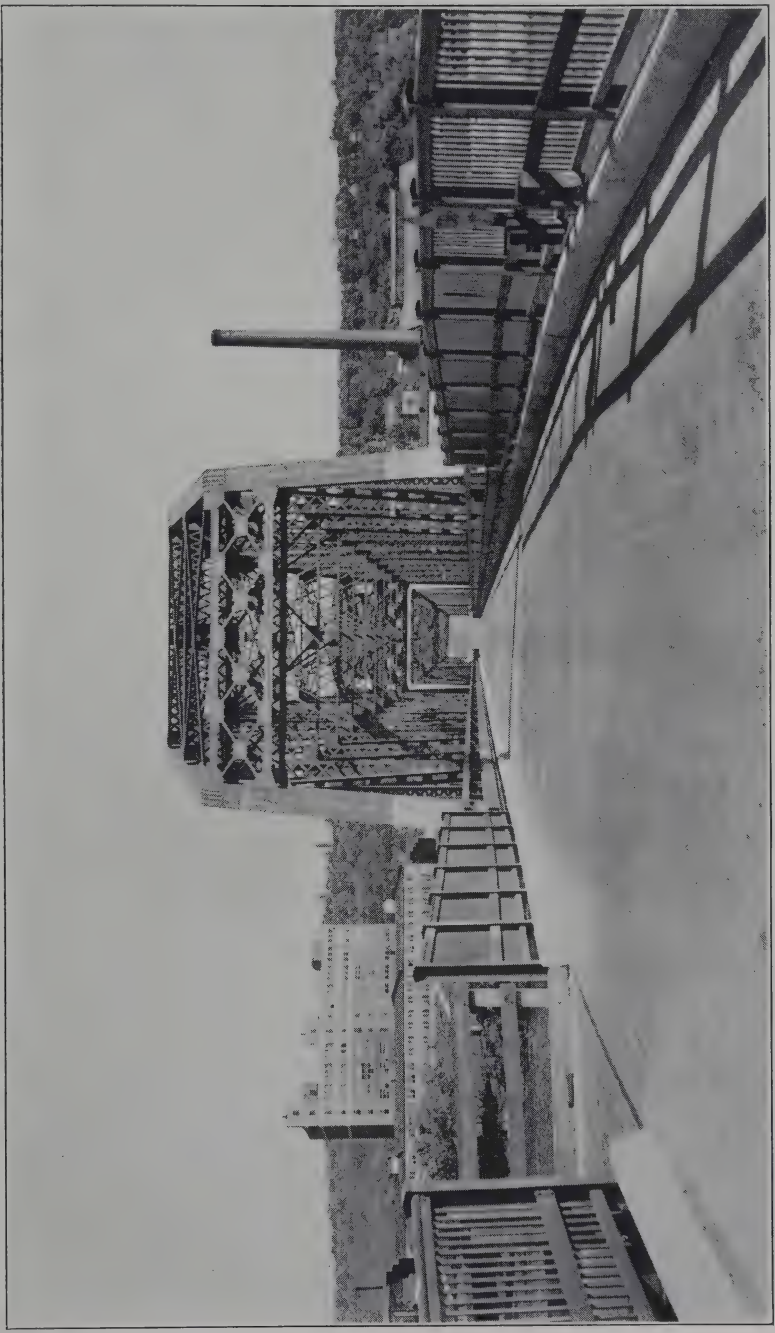
McDonough Street Bridge, Joliet. (Bridge closed.)



McDonough Street Bridge, Joliet. (Bridge open.)

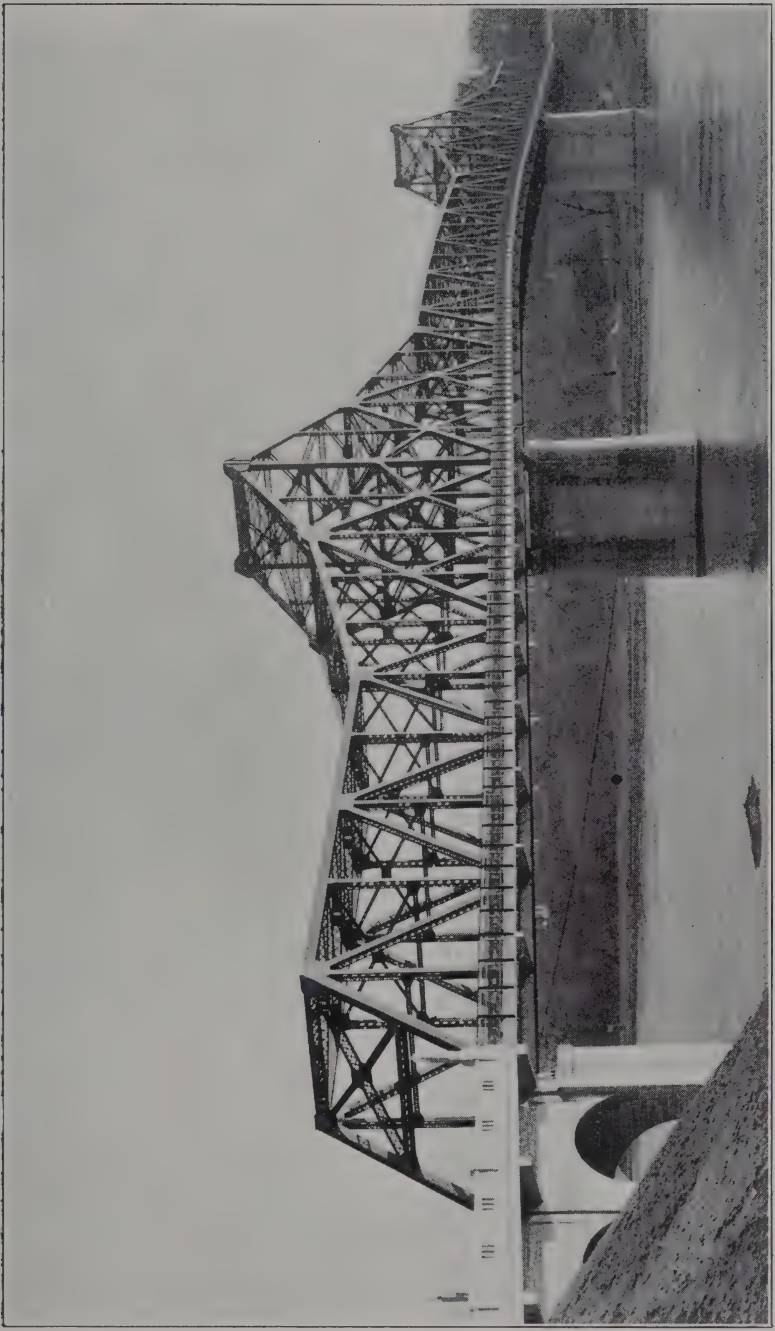


Marseilles Bridge. The span over the Marseilles Canal is shown on the left and the three spans over the Illinois River on the right. A 110 foot steel viaduct connects the two main structures.



End view from the Canal Span of the Illinois River Bridge at Marseilles, looking north. The viaduct connection is in the foreground.

Hilliard Bridge, Ottawa. A side view looking west and showing the C, B. & Q. Bridge in the background.



Hilliard Bridge, Ottawa, looking south.

BRIDGES.

By Gunni Jeppesen, *Bridge Engineer.*

GENERAL OUTLINE.

During the fiscal year July 1st, 1933, to June 30th, 1934, the McDonough Street Bridge in Joliet, the Illinois River Bridge at Marseilles, and the Hilliard Bridge at Ottawa were completed, and work was commenced on the Ruby Street Bridge in Joliet.

The present status of the work (June 30th, 1934) is as follows:

Name of Bridge	Drawings Completed, Per cent.	Construction Completed, Per cent.
Ruby Street Bridge, Joliet	100	30
Jackson Street Bridge, Joliet	100	100
Cass Street Bridge, Joliet	100	100
*Van Buren Street Temporary Bridge, Joliet	100	100
Jefferson Street Bridge, Joliet	100	100
McDonough Street Bridge, Joliet	100	100
Brandon Road Bridge	100	100
Smith's Highway Bridge, near Channahon	100	100
Marseilles Canal Bridge	100	100
Illinois River Bridge at Marseilles	100	100
Hilliard Bridge, Ottawa	100	100

*Was removed December 23, 1932,

Note.—The highway bridges at Morris and Seneca were built by the Division of Highways.

On October 1st, 1933, the Bridge Engineer's Office was transferred from Chicago to Joliet. On June 1st, 1934, the office of Division Engineer was abandoned and all work in connection with the Illinois Waterway Bridges, including maintenance and operation, was put under the office of the Bridge Engineer.

RUBY STREET BRIDGE.

A brief description of the Ruby Street Bridge will be found on page 25 of the 16th Annual Report to which reference is made. Work was commenced in January, 1934; the West pit has been completed; and work is now under way on the East pit.

The Powers-Thompson Construction Co. has the contract for the substructure while the contract for the superstructure was let to the Milwaukee Bridge Co. L. T. Wyly is resident engineer for the State.

MCDONOUGH STREET BRIDGE.

The McDonough Street Bridge is a double leaf Scherzer rolling lift bridge, similar to the Jackson, Cass and Jefferson Street Bridges. It was designed for 75 ton freight cars to accommodate the Chicago and Illinois Valley Railway, which, however, discontinued operation a few months after the bridge had been completed.

As mentioned in the 15th Annual Report, certain improvements were embodied in this bridge that are not found in the earlier Joliet bridges, such as the substitution of speed reducers for open gearing, and submarine for overhead cables, and this is reflected in easier operation and better appearance.

The Powers-Thompson Construction Co. had the contracts for the substructure and the approaches, whereas the superstructure was fabricated and erected by the Mississippi Valley Structural Steel Co. The bridge was completed in October, 1933, but the paving of the approaches was deferred until the Spring of 1934.

ILLINOIS RIVER BRIDGE AT MARSEILLES.

The Illinois River Bridge at Marseilles, which was built jointly by the State of Illinois, the County of LaSalle, and the City of Marseilles, was completed in September, 1933, and opened to traffic September 15, 1933. It is a three span structure connecting, by means of a 110 foot steel viaduct, with the bridge over the canal. The river spans are identical with the canal span being 335 feet long, and having a concrete slab roadway 18 feet wide.

The substructure was built by the Congress Construction Co. and the superstructure by the Mississippi Valley Structural Steel Co.

HILLIARD BRIDGE.

The Hilliard Bridge is described in the 16th Annual Report, to which reference is made. (See also Engineering News-Record of June 28, 1934, for a more detailed description.) The length of the steel structure is 1,000 feet with a cantilever main span, 500 feet long. The width of the roadway is 24 feet and there are two 5 foot sidewalks outside the trusses.

The erection was carried out by the cantilever method, employing only two steel bents under each of the anchor spans, and the program, prepared previous to starting erection, was adhered to in every detail and proved very successful, with no time lost.

The MacDonald Engineering Co. had the contract for the substructure and approaches, while the superstructure was fabricated and erected by the Wisconsin Bridge Co. L. T. Wyly was resident engineer for the State.

The Division of Highways shared in the cost of the bridge, while parts of the approaches were built by the City of Ottawa.

The Hilliard Bridge was opened with elaborate ceremonies on Armistice Day, November 11, 1933.

MISCELLANEOUS WORK.

In addition to the above mentioned projects, miscellaneous contracts of less importance were let and completed during the fiscal year. These included the completion of the Vaulted Sidewalks along the approaches to the Cass and Jefferson Street bridges (West Englewood Constr. & Supply Co., Contractor) and the installation, of various navigation lights, and of street lights on the Joliet bridge approaches; also the completion and overhauling of the electrical installation in the Utilities Tunnel under the river, connecting the East side of Joliet with the West side. The Wadeford Electric Co. had the contract for this work.

BUREAU OF RIVERS AND LAKES CONTROL AND FLOOD RELIEF.

W. G. Potter, *Chief.*

Work was continued on Flood Relief on projects under the Act for Flood Relief "Other Than Illinois River." (H. B. 916, 58th General Assembly.)

On the Saline River, South Fork, the work of improving the river was completed in September, the final cost for Middle Fork and South Fork being $183,992.99. This, one of the most important flood relief projects, entirely removed the sanitary hazard at Harrisburg and the flood hazard for a number of drainage districts above Harrisburg.

On the lower Cache River, the injunction obtained by the Mobile and Ohio Railroad Company during the previous year, was settled and the project was completed. This consisted of three miles of new channel and the clearing of about three additional miles of drift piles, sand bars and overhanging trees.

On the Embarrass River near Lawrenceville, the Federal Injunction obtained by an oil company was dissolved by a change of channel and work was again started and will soon be completed.

On the Illinois River, levee work was continued by the U. S. War Department on districts in which the State paid one-third of the cost and the work on the following districts was completed with the proper proportion of the unexpended balance being returned to the State.

Big Swan Drainage and Levee District.
Hartwell Drainage and Levee District.
Keach Drainage and Levee District.
Scott County Drainage and Levee District.
Hillview Drainage and Levee District.

On the last named district, additional work was proposed by the U. S. War Department and the State reallotted the unexpended balance of $28,366.67 and also allotted $3,500 additional to this District. This new work on the Hillview District is now being done.

The amounts returned and returnable from the U. S. War Department are shown in the financial statement by the Auditor, Mr. Harrison, which follows:

STATUS OF APPROPRIATIONS.

FLOOD RELIEF ILLINOIS RIVER VALLEY To July 1, 1934	H. B. 916 Reappropriated Balance	S. B. 777 Contingent on Refunds from U. S.
	$ 35,949.91	$110,000.00
Received from U. S. War Department:		
5/10—Unexpended balance Scott Co. D & L Dist		$ 12,149.97
5/10—Unexpended balance Keach D & L Dist		21,638.55
Total Credited to Fund	$ 35,949.91	$ 33,788.52
Expended to date	20,710.75	.00
Balance in Treasury	$ 15,239.16	$ 33,788.52

Receivable:

Approx. amount of refunds not yet received:

Scott Co. D & L Dist.	$ 860.00	
Big Swan D & L Dist.	13,000.00	
Hartwell D & L Dist.	16,000.00	
Valley City D & L Dist.	14,000.00	
		43,860.00
		$ 77,648.52
Balance in Reappropriated Fund		15,239.16
		$ 92,887.68
Big Swan D & L Dist. (refund contingent on reimbursement from Maryland Casualty Co.)		18,000.00
Possible available balance		$110,887.68

Obligated:

Revised allotments for U. S. work on levees:

Lost Creek D & L Dist.	$ 27,000.00	
Mauvaisterre and Naples	35,000.00	
Hartwell	10,500.00	
Allotments independent of Federal Government:		
Valley City D & L Dist.	876.71	
Clear Lake D & L Dist.	650.00	
		$ 74,026.71
Possible free available balance		$ 36,860.97

NOTATION: Out of previous estimated returns from Federal Government, the amount of $28,366.67 was reallotted to Hillview D & L District, together with $3,500.00 paid out of "Reappropriated" Fund, by Voucher No. 270 to U. S. District Engineer. This eliminated an allotment of $31,866.67 to Hillview and a refund of $28,366.67 from the Federal Government. Total amount of refunds and possible refunds from Federal Government are as follows

Hillview D & L District	$ 28,366.67	Reallocated
Scott Co. D & L District	12,149.97	Refunded
Keach D & L District	21,638.55	Refunded
Scott Co. D & L District (additional)	860.00	Not yet received
Big Swan D & L District	13,000.00	Not yet received
Hartwell D & L District	16,000.00	Not yet received
Valley City D & L District	14,000.00	Not yet received
Big Swan D & L District (possible)	18,000.00	
Total	$124,015.19	contingent on reimbursement from Maryland Casualty Co.

On October 1, 1933, because of the near exhaustion of the funds for flood relief work, the services of Mr. L. C. Craig, Division Engineer in charge of flood relief work, were discontinued. In closing his service with the State, Mr. Craig submitted a report of possible work still to be done on Illinois River Districts which have requested State aid in conjunction with Federal aid. His recommendations in regard to future work will be very valuable and of great service in continuing flood relief work, and his report to the Chief Engineer follows in part:

"August 14, 1933.

Mr. Walter M. Smith,
Chief Engineer,
Office.
Dear Sir:

DIVISION ENGINEER'S REPORT
FLOOD RELIEF—ILLINOIS RIVER.

In accordance with your instructions I submit herewith a report covering applications from Drainage and Levee Districts along the Illinois River for State Flood Relief Funds recently reappropriated for the Illinois River Valley:

On July 26th I visited the office of the U. S. District Engineer in St. Louis and interviewed Capt. B. M. Harloe, Military Assistant to the District Engineer who advised me as follows:

The District Engineer is willing to cooperate with the State, if possible, on any projects the State of Illinois may recommend. To this end the

District Engineer would like to know as soon as possible what project or projects the State recommends and for which the State is prepared to furnish funds to the extent of one-third of the estimated cost of construction.

As soon as this information is furnished, the District Engineer will have the necessary surveys made and preliminary plans prepared for presentation to the Mississippi River Commission for a decision as to whether or not the projects can be recommended for construction.

It was advised that at present (July 26th) no funds are immediately available for new levee contracts on the Illinois River but that it was expected that funds would be allotted soon from the $3,300,000 appropriation of the Federal Public Works Bill.

AVAILABLE STATE FUNDS.

The only State funds immediately available for flood relief along the Illinois River is the reappropriation of House Bill No. 916 less whatever funds are obligated or should be retained for engineering expense and incidentals.

Refering to my letter to you of July 24th, the available cash balance on July 1st, after deducting the amount obligated by contracts was $21,854.41. It is believed that some of this balance should be held back for engineering and incidentals. Therefore I have deducted $4,854.41 from the above available balance leaving $17,000 available for levee construction.

The appropriation from Senate Bill No. 777 will be available only as funds are returned to the State by the Federal Government.

From information furnished me by the Federal Government engineers I have estimated the sums to be expected from the Federal Government on given dates and added to each sum the amount the State has available now. The "set up" is as follows:

Available for Flood Relief—Date	*Amount*
This date	$ 17,000.00
By Feb. 1, 1934	41,000.00
By July 1, 1934	82,500.00
By Jan. 1, 1935	98,500.00

From the above, it may be seen that if the appropriation is allotted to one large project, construction cannot commence for 12 months or possibly 18 months from this date.

On account of the lack of sufficient State funds to cover more than a third of the cost of projects applied for, and because these funds will be available from time to time only as they are returned to the State by the Federal Government, it will be difficult to lay out a program for the expenditure of these funds which will be satisfactory in every respect.

In making allotments at this time it is believed that the following considerations should govern:

a. If possible funds should be spent only in cooperation with the Federal Government where one dollar expended by the State will represent three dollars worth of actual construction.

b. Funds should be spent for the greatest benefit to the largest number with due consideration to the protection of both lives and property.

c. For Flood protection a levee system may be compared to a chain which is only as strong as its weakest link, therefore, if possible State funds should be spent for complete levee projects or those projects which will provide complete safety for the land owners and inhabitants of each district.

With the above considerations in mind the following is offered as one suggestion:

PROJECT	Acres Given Complete Protection	Persons Protected (estimated)	Amount Requested from State	Probable Cost of Project to State
Lost Creek and Hager Slough Drainage and Levee Dist.	3,758	125	$ 16,000.00	$ 25,000.00
Village of Naples and Mauvaisterre Drainage and Levee Dist.	3,969	300	36,649.76	46,000.00
Hillview Drainage and Levee Dist.	12,316	350	23,736.00	28,000.00
Moving telegraph lines	......	....	19,275.00	....
Total	20,043	775	$ 95,660.76	$99,000.00

In the above tabulation the amounts requested by the Districts from the State are based on estimates made some time ago and in the case of the first two Districts these estimates were made by local engineers. Final estimates by Federal Government engineers will be higher due to an increased cost of all Federal Government contracts. For the purposes of the above tabulation about 30% has been added to the amounts requested from the State to obtain the amounts in the last column representing the probable cost of work.

In the case of the Hillview Drainage and Levee District, it is assumed that this District will be able to raise the $19,275.00 requested of the State to move a telegraph line possibly through an R. F. C., Federal Government loan. This assumption, of course, may be in error.

PROJECTS NOT INCLUDED IN ABOVE SUGGESTED PROGRAM

The projects not included in above suggested program are:

PROJECT	Acres Partially or Completely Protected	Persons Protected	Amount Requested from State	Probable Cost of Project to State
Clear Lake Special Drainage Dist...	2,500	48	$ 10,628.70	$ 12,000.00
South Beardstown Drainage and Levee Dist.	7,600	150	134,203.95	165,000.00
Big Prairie Drainage and Levee Dist...	1,800	50	50,845.39	65,000.00
Meredosia Lake Drainage and Levee Dist.	3,500	125	100,000.00	100,000.00
Total	15,400	373	$295,678.04	$342,000.00

In the above tabulation as with the previous one the amounts requested (with the exception of the amount for the Meredosia Lake District) have been increased by 30% to obtain the probable cost.

By comparing the totals in the above tabulation with the totals given in the previous tabulation for a suggested program for flood relief you will note that more acres and more persons are completely protected by the suggested program for an expenditure of less than $100,000.00 of State funds than would be protected or partially protected by the expenditure of 3 times this amount in the last tabulation.

State funds are available for only a portion of the projects listed above. Of course, State funds might be used for the complete Meredosia Lake project of 3500 acres leaving out all the others or the Big Prairie project and a portion of the South Beardstown project.

The following is a discussion of the projects not included in the suggested program:

CLEAR LAKE SPECIAL DRAINAGE DISTRICT

This district is not included for two reasons:

One is the district is not protected from the Illinois River and State funds expended would be for partial protection only; the other is that this district is not within the jurisdiction of the Federal Government and no Federal Government funds could be used for cooperation with the State.

SOUTH BEARDSTOWN DRAINAGE AND LEVEE DISTRICT

State funds are not sufficient to grant the aid asked for unless the District or another agency rather than the State will pay for the right of way taken. The district requests the State to pay $33,865.00 for this right of way. It is doubtful whether the District can raise this sum. The District might obtain this sum as a loan from the R. F. C. in connection with a refinancing of the Districts bonds by the Federal Government.

BIG PRAIRIE DRAINAGE AND LEVEE DISTRICT

This district contains only 1800 acres. The total cost of enlarging the levee amounts to as much as the land is worth at the present time. The district's levee was built too close to the river bank and too close to the levee of the South Beardstown District on the opposite bank.

This office has made a very complete investigation of the problem of setting back the levees of both the Big Prairie and South Beardstown Districts and is firmly convinced that the Big Prairie District should be abandoned. The benefit from its abandonment plus the saving in cost of levee enlargement would exceed by a considerable sum the cost of buying the land in the district if it had to be done.

MEREDOSIA LAKE DRAINAGE AND LEVEE DISTRICT

This is a desirable project but if the District is to be completely protected it will take the entire sum the State has available in the appropriation. The district contains only 3500 acres.

This District's original application was for $27,529.66 to enlarge the worst portion of its levee. The expenditure of this sum for partial protection might be justified as a part of the State's program, in view of the fact that this district is next in line on the Federal Government program after the Hillview District.

THE BOTTLE-NECK BELOW BEARDSTOWN

A discussion of the State's program would not be complete without further reference to the narrow flood plane or "bottle-neck" below Beardstown. This bottle-neck involves the two Districts, South Beardstown and Big Prairie mentioned above.

A few people in the Sangamon River Valley near Beardstown who have an exaggerated opinion of the effect or benefit to be obtained by setting back the levees of the above mentioned Districts would like to have the State spend all the money available at this time on these set-backs. It is also alleged that it was the intention of the original framers of this particular flood relief law that these levees be set back before State money was spent on levees elsewhere.

Without going into the matter mentioned in the preceding paragraph, I will say that this office has always recommended the setting back of levees of these two districts if a practical plan can be found for so doing.

It has already been stated that State funds are not sufficient to complete the set-back plans proposed by the above two Districts:

In connection with the adoption by the State of a partial set-back plan the following facts are presented:

A partial plan might be adopted which would include the following in the South Beardstown District:

	Aid Requested	Probable Cost
Levee Set-back No. 1	$ 22,221.61	
Levee Enlargement No. 1	5,778.27	
Borrow Pit Fill	2,369.07	
Levee Set-back No. 2	29,406.88	
	$ 59,775.83	$ 77,000.00
Right of way purchased by State (estimated)		18,000.00
Total		$ 95,000.00

The effect of the above set-back construction on maximum flood heights at Beardstown would be less than 3 inches as determined by accurate hydraulic computations. This lowering of flood heights would extend up the Illinois River in a lessening amount to some point south of Peoria where the effect would be zero.

Neither the South Beardstown District nor any other District would receive complete flood protection by the above partial plan.

Respectfully submitted,

L. C. Craig,
Division Engineer"

LCC/R

At that time the work of caring for the rivers and lakes of the State was placed in the Bureau of Rivers and Lakes Control with W. G. Potter in charge, located in Springfield; with Walter M. Smith, Jr. as District Engineer in Chicago in charge of the northern part of the State, and E. D. Dewey, District Engineer at Carbondale, covering the southern part of the State. All uncompleted flood relief work was cared for by this Bureau.

Included in this were the repairs to Valley City Drainage and Levee District pumping station, a bridge over McGee Creek in the same district, and repairs to the levees of Clear Lake District.

WORK OF THE NORTHERN DISTRICT, BUREAU OF RIVERS AND LAKES CONTROL.

This consisted of routine inspection work on the Chicago, Calumet, DesPlaines, Fox and Rock Rivers and their tributaries. This work covers a general supervision of all streams, in regard to permits, complaints, high and low water conditions.

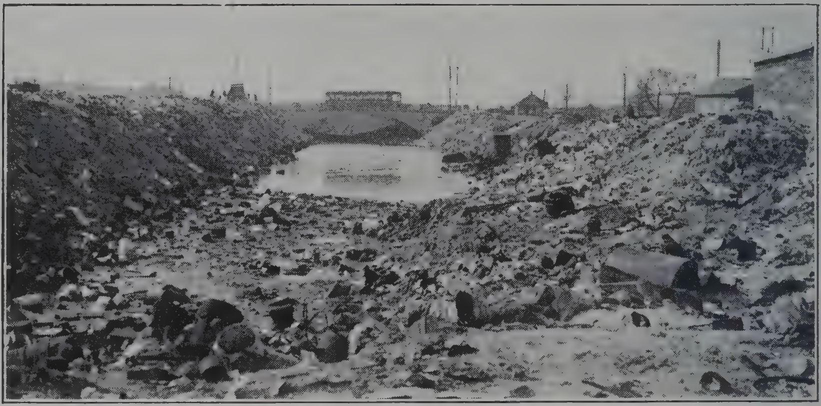
In November, 1933, at the beginning of activities of the Civil Works Administration, this District took a very active interest in utilizing these activities for the benefit of the rivers and lakes. During the four months of the C. W. A. seventeen projects were approved and undertaken; seven projects approved but actual work not started, and twelve projects for which applications have been submitted but approval was not received before the conclusion of C. W. A. activity. These projects were for improvement of banks and channel for Fox River in various places, for repairs to levee in Carroll County; for surveys for barge terminal site, Chicago River Slips, and Lake Michigan Shore Line levels and other similar projects.

These projects furnished employment for about 2,650 men, but only three were completed before the C. W. A. ended its work.

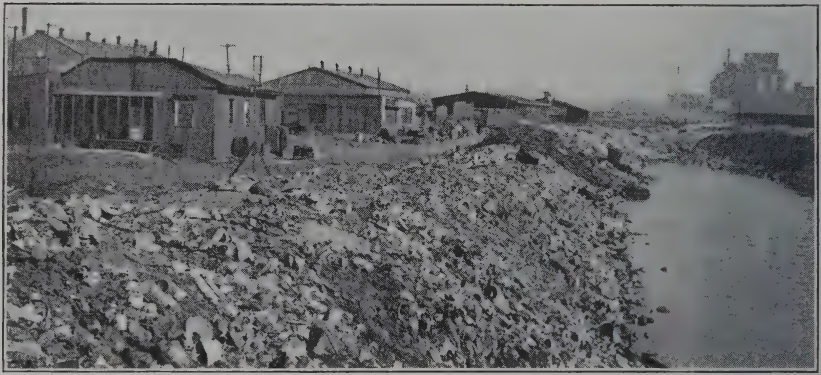
I. & M. CANAL DUMPING.

As was stated in the last Annual Report, all dumping in the I. & M. Canal by the City of Chicago was stopped in consequence of an opinion rendered by the Attorney General. Early in 1934, however, dumping was again started by the City and finally an injunction was obtained against the City and after February 15, 1934, no further dumping has been done by the City.

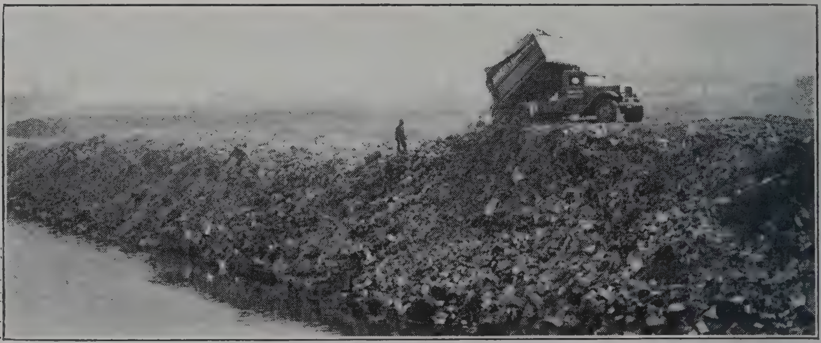
However, shortly thereafter, Mr. Patrick MacDonnell, who claims ownership of a part of the I. & M. Canal, east of Kedzie Avenue, opened a ''Private Dump'' and invited all to use his property for that purpose. In June, 1934, an injunction was obtained forbidding him to dump in the *canal bed* but allowing dumping on the reserve. Since then he has allowed material to pile high on the reserve strips where ordinary rains will cause the material to wash down to the bed of the canal. Apparently nothing can be done to stop this.



"McDonnell Private Dump" on I. & M. Canal, showing fill made previous to the temporary injunction. This shows the gap left in the fill near the Kedzie Avenue Bridge.



Northeasterly view of the "McDonnell Private Dump" on I. & M. Canal, northeast of the Kedzie Avenue Bridge.



Another view of the "McDonnell Private Dump" from the east side of the Kedzie Avenue Bridge.

FOX RIVER CONTROL.

For many years, the owners of power rights of the dams along the Fox River have been in the habit of drawing the water down below the crest of the dams until all possible power was exhausted. This naturally resulted in a semi-dry bed with its accompanying unsightly and insanitary condition above each dam so used, and a like condition below each dam while power was shut off and the pools were refilling.

In June, 1934, largely through the influence of the District Engineer, an organization known as the Fox River Flow Commission was formed, comprised of a Committee of nine men, three selected by the power users, three selected by the Mayors of the interested cities, and three by the State, one representing the Department of Public Works and Buildings, one the Department of Health and one the Department of Conservation.

With a permanent Chairman and Secretary, a pledge was drawn obligating each power user to maintain the water above his dam at a stage not more than six inches below its crest. This pledge has been signed by all users.

WORK OF THE SOUTHERN DISTRICT.

On October 1, 1933, the office of this District was moved from Harrisburg to Carbondale where it is maintained in conjunction with the office of the Highway Division. The temporary office at Beardstown, previously maintained for Flood Control work, was abandoned and combined with the main office at Springfield.

The flood relief work on the Saline, Cache and Embarrass, already mentioned above, were primarily cared for by the District Engineer with assistance of the writer and of the Chief Engineer of the Division.

Embarrass River improvement near the upper end and looking downstream.

STATE WATER SURVEY DIVISION
Library Copy

Embarrass River improvement at the upper end of the work and looking upstream.

MISCELLANEOUS.

About two years ago, a steel truss bridge formerly used by an electric railway, now extinct, across the Big Muddy River at Murphysboro, collapsed and fell into the stream. In consequence of this, a great blockage of logs and drift formed in the river above the fallen bridge, not only raising the height of flood waters, but having a very deleterious effect on the water supply of the City, whose intake pipes were but a few feet below the bridge. In the

View showing debris collected above the fallen bridge on the Big Muddy River at Murphysboro.

Another view of the debris against the fallen bridge on the Big Muddy River

Spring of 1933, a heavy flood occurred causing further damage by erosion of the bank near the intake. As the Railway Company had been abandoned and the track and right of way had been turned back to the former private owners, no one could be found who could be held responsible for the bridge. Consequently the Division contracted for the removal of the bridge and the work was done at a cost of $600.00. Pictures herewith show the condition of the stream previous to removal of the bridge.

View showing the fallen bridge on the Big Muddy partially removed from the river.

Also in the Mississippi River at Chester, a barge which sunk years ago, caused accretions affecting the water supply of the Southern Illinois Penitentiary and the City of Chester. The Division was able to find the owner of the barge and cause him to remove it and its accretions sufficiently to relieve the trouble to the water supply.

The District Engineer has also been very active in supervision and inspection of the various rivers and tributaries in regard to locating obstructions and blockades in the streams and in securing their removal by owners or by County authorities.

In the past, the Division has had no regular inspection of streams in the Southern part of the State, and it is expected during the coming year that a corps of Inspectors will be organized under this Bureau for that purpose.

MAIN OFFICE AT SPRINGFIELD.

As stated above, on October 1, 1933, with the formation of the Bureau of Rivers and Lakes Control, the writer, as Chief, moved from Chicago to Springfield, and the two District Engineers report to him there.

The work of this office is to coordinate the work of the Districts and also to care for the central part of the State which is not included in the other districts.

All applications for permits are received here and, after consideration, are recommended for permit or disallowed.

PERMITS ISSUED.

The following formal permits were issued during the year ending June 30, 1934.

Bridges	49
Piers	15
Dredging and filling	39
Shore walls	41
Sewer outlets	4
Water intakes	3
Gas, water, sewers and cable	18
Docks and breakwaters	19
Drainage Districts	3
Improving streams	21
Dams and reservoirs	12
Miscellaneous	7
Total formal permits	231

On weekly list of small bridges and culverts to Division of Highways	316
Total permits issued	547
Total permits issued during 1932-1933	544
Increase during 1933-1934	3

Of these permits thirty-six were issued for work under C. W. A. of various counties.

THE DROUTH OF 1933-34 IN ILLINOIS

By W. G. Potter, *Chief*.

BUREAU OF RIVERS AND LAKES CONTROL
Division of Waterways
State of Illinois.

During the past year the State of Illinois and the northwestern States of the Mississippi Valley have undergone one of the worst drouths on record. Crops have been lost or greatly damaged, agricultural lands have been denuded of their top soil by sand storms. Other lands have suffered from the deposit of sand from the arid regions upon good soil. Wells have gone dry; cities and villages have been deprived of their water supply. Reservoirs which were the source of supply have failed so that some towns had to import water by train loads of tank cars. Streams have been so low that many contained no water or consisted of a series of pot holes causing the death of fish life in large numbers. Trees, lacking their usual water have withered and died. Even the Mississippi River has been at the lowest stage on record during the past year.

RAINFALL.

While this drouth is spoken of as the drouth of '33 and '34, this is a misnomer. In reality it should be called the drouth of 1930-1934.

This will be clearly seen by the tabulation below in Table 1, which is compiled from the U. S. Weather Bureau Climatological Data for the Illinois Section.

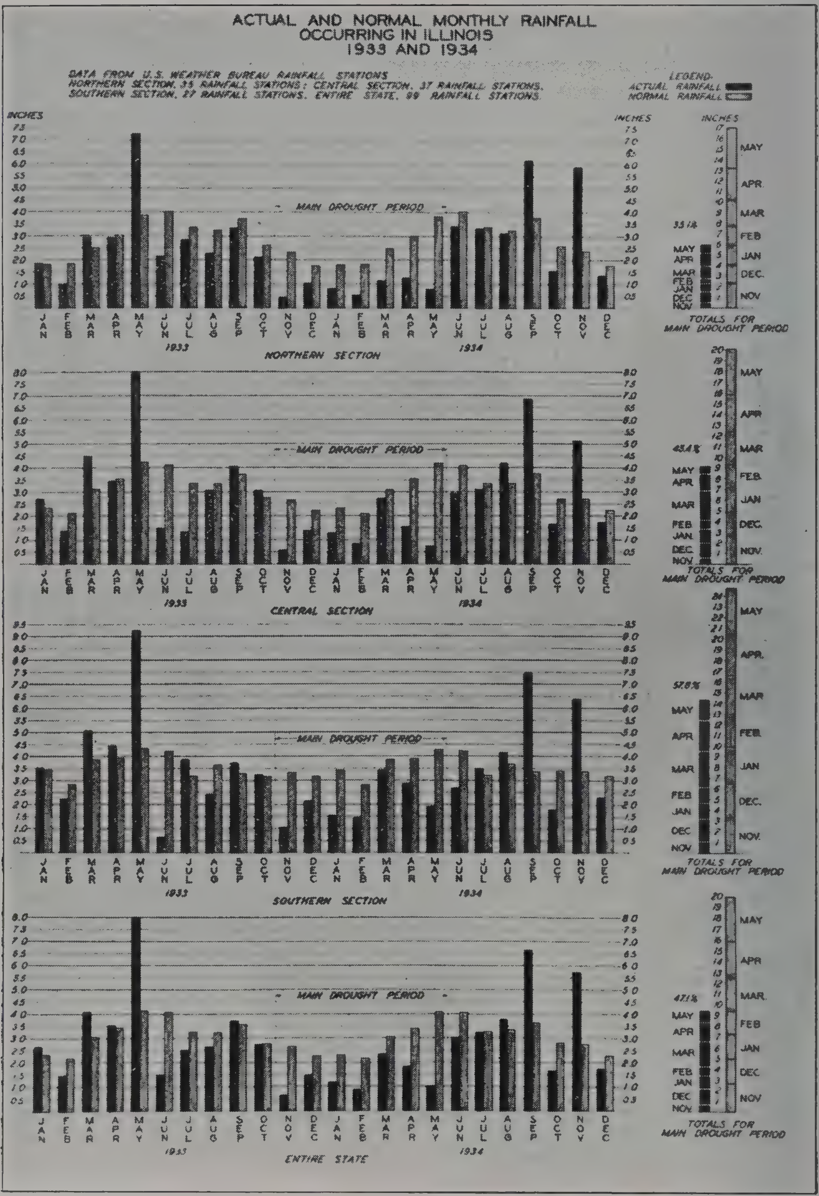
This divides the State into three Sections, the Northern, Central and Southern. The record for the Northern Section is the mean of observations at thirty-five Weather Bureau Stations, the Central of thirty-seven and the Southern of twenty-seven Stations, totaling rainfall and temperatures records at ninety-nine different towns.

Table 1 shown below gives deficiency or surplus in the annual rainfall for 1930 to 1933 and in the months from January to July 1934 as follows:

TABLE I

DEPARTURE FROM NORMAL RAINFALL IN ILLINOIS 1930 TO JULY, 1934 IN INCHES

	Northern Section	Central Section	Southern Section	Entire State
1930	— 5.45	— 9.32	—10.97	— 8.46
1931	+ 2.38	+ 0.95	— 0.55	+ 1.61
1932	— 1.27	— 2.03	+ 3.71	+ 0.29
1933	— 4.12	— 2.58	— 0.95	— 2.25
1934				
January	— 1.01	— 1.03	— 1.90	— 1.11
February	— 1.30	— 1.24	— 1.39	— 1.27
March	— 1.36	— 0.36	— 0.45	— 0.70
April	— 1.72	— 1.97	— 1.02	— 1.59
May	— 3.03	— 3.47	— 2.36	— 3.03
June	— 0.62	— 1.17	— 1.53	— 1.03
July	— 0.06	— 0.27	+ 0.27	— 0.02
Total	—18.56	—22.49	—17.14	—17.56


ACTUAL AND NORMAL MONTHLY RAINFALL
OCCURRING IN ILLINOIS
1933 AND 1934
DATA FROM U.S. WEATHER BUREAU RAINFALL STATIONS
NORTHERN SECTION, 35 RAINFALL STATIONS; CENTRAL SECTION, 37 RAINFALL STATIONS,
SOUTHERN SECTION, 27 RAINFALL STATIONS. ENTIRE STATE, 99 RAINFALL STATIONS.
LEGEND
ACTUAL RAINFALL
NORMAL RAINFALL
INCHES
MAIN DROUGHT PERIOD
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
1933
1934
NORTHERN SECTION
CENTRAL SECTION
SOUTHERN SECTION
ENTIRE STATE
33.1%
45.4%
57.8%
47.1%
TOTALS FOR MAIN DROUGHT PERIOD

This tabulation shows that for the period from January 1, 1930 to August 1, 1934 the rainfall over the entire State had a deficiency from the Normal of 17.56 inches in spite of a small surplus in '31 and '32, the greatest deficiency being in the Central Section.

However, for 1933 and 1934 the greatest deficiency has been in the Northern Section, gradually decreasing towards the South.

Also in Table 2 is shown the percentage of Actual rainfall to the Normal, beginning with May, 1933, which was a heavy excess month, covering the climax of the drouth and ending in July, 1934, which month was practically at normal.

PERCENTAGE OF ACTUAL TO NORMAL RAINFALL

TABLE III

	Northern Section	Central Section	Southern Section	Entire State
1933				
May	186.9	186.6	213.4	193.5
June	52.7	35.9	14.9	36.3
July	83.8	39.4	121.6	76.3
August	70.2	92.2	66.3	80.9
September	89.3	109.2	112.7	103.7
October	58.6	111.3	101.6	99.7
November	19.4	22.0	31.1	24.3
December	57.7	62.9	66.9	64.3
1934				
January	43.9	55.6	44.6	51.5
February	29.0	40.7	50.5	41.2
March	45.2	88.4	88.3	77.0
April	42.7	44.0	73.8	53.2
May	20.7	17.4	44.6	25.9
June	84.7	71.5	66.3	74.6
July	98.2	91.9	108.5	99.4

From this we see that in the climax of the drouth period from November 1, 1933 to and including May, 1934, the percentage of Actual to Normal rainfall was as follows:

	Northern District	Central District	Southern District	Entire State
Nov. 1, '33 to June 1, '34	35.1%	45.4%	57.8%	47.1%

To show graphically the comparison between actual and normal rainfall, Chart 1 is included. This gives the actual and normal for each month for years 1933 and 1934 in the three sections of the State and in the State as a whole. In addition, the Chart also shows a continuous building up of the same rainfalls for the seven climax months from November to May inclusive.

TEMPERATURE.

The condition of the rivers and streams is not only dependent on the rainfall but also largely on temperatures as well as on the physical character of the land. In Illinois, the land is mostly fairly level and the natural runoff is slow. Therefore, there is considerable "lag" between rainfall and run-off.

In the extreme heat of the past season, evaporation was much greater than usual; transpiration for plant life was also greater and the ground water table had become so low that drainage to the streams was almost entirely lacking through the field drains.

To show the extreme and long continued heat, Table 3 is here given showing the number of days in which the maximum temperature was above 90° and above 100°. Four cities in various parts of the State were chosen for this, as given below.

TABLE 3.
NUMBER OF DAYS WITH MAXIMUM ABOVE 90° and 100° AT

MONTH	CHICAGO		SPRINGFIELD		ROCKFORD		CAIRO	
	90°	100°	90°	100°	90°	100°	90°	100°
May 1934	7	0	8	1	10	1	2	0
June	8	1	23	6	17	2	17	0
July	12	2	23	6	15	6	23	3
August	5	1	13	4	10	1	13	0
Total, 4 months	32	4	67	17	52	10	55	3

TABLE 4.
FOX RIVER RAINFALL IN DROUTH OF 1933-34 IN INCHES
Showing percentage of Actual to Normal Rainfall

MONTH	AURORA			ELGIN			OTTAWA			Mean %
	Actual	Normal	%	Actual	Normal	%	Actual	Normal	%	
June 1933	2.48	3.94	62.9	3.95	3.86	102.3	1.40	3.41	41.1	68.8
July 1933	3.59	3.40	105.6	3.45	2.90	119.0	1.80	3.37	53.4	92.7
August 1933	1.74	3.33	52.3	1.60	2.88	55.5	2.30	3.34	68.9	58.9
September 1933	3.85	3.64	105.8	2.52	4.17	60.4	2.84	3.53	80.5	82.2
October 1933	3.16	2.73	115.7	2.96	3.03	97.7	1.83	2.17	84.3	99.2
November 1933	0.60	2.40	25.0	0.42	2.18	19.2	0.64	2.38	26.9	23.7
December 1933	0.75	1.89	39.7	0.93	1.34	69.4	0.92	1.80	51.1	53.4
January 1934	0.82	2.03	40.4	0.82	1.73	47.4	0.78	1.95	40.0	42.6
February	0.39	1.97	19.8	0.41	1.57	26.1	0.50	1.87	26.7	24.2
March 1934	0.74	2.60	28.5	1.08	2.41	44.8	0.85	2.63	32.3	35.2
April 1934	1.29	2.95	43.7	1.31	2.90	45.2	1.02	2.98	34.2	41.0
May 1934	0.56	3.97	14.1	0.55	3.70	14.9	0.44	4.04	10.9	13.3
June 1934	5.44	3.94	138.1	4.84	3.86	125.4	2.87	3.41	84.2	115.9
July 1934	1.55	3.40	45.6	2.16	2.90	74.5	2.53	3.37	75.1	65.1
Mean			59.8			64.4			50.7	58.3
Mean percentage for period from November 1, 1933 to June 1, 1934										33.3

TABLE 5.

ROCK RIVER RAINFALL IN 1933-34 DROUTH PERIOD IN INCHES

Showing percentage of Actual to Mean Rainfall

MONTH	DIXON			MARENGO.			OREGON			ROCHELLE			ROCKFORD			SYCAMORE			Mean
	Actual	Normal	%	Actual	Normal	%	Actual	Normal	%	Actual	Normal	%	Actual	Normal	%	Actual	Normal	%	
June 1933	1.77	3.79	46.7	2.68	4.14	64.7	2.00	3.98	50.3	3.10	5.99	51.8	2.34	4.19	55.8	3.63	4.18	86.8	59.35
July 1933	2.75	3.67	75.0	4.26	3.31	128.7	3.67	2.86	128.3	5.22	4.15	125.8	6.30	3.46	182.1	3.08	3.39	90.9	121.8
August 1933	2.63	3.21	81.9	1.54	3.44	44.8	1.18	3.09	38.2	1.32	3.32	39.8	1.38	3.31	41.7	1.95	3.38	57.7	50.7
September 1933	1.82	3.74	48.7	2.30	3.87	59.4	2.28	3.88	58.7	2.21	4.88	45.3	3.06	3.38	90.5	2.48	3.69	67.2	61.6
October 1933	1.64	2.50	65.6	1.31	2.47	53.0	1.89	2.71	69.7	1.39	2.84	48.9	1.44	2.86	50.3	1.74	2.92	59.6	57.85
November 1933	0.26	1.81	14.4	0.76	2.02	37.6	0.28	2.12	13.2	0.31	2.43	12.8	0.48	2.19	21.9	0.26	2.25	11.6	18.6
December 1933	0.99	1.60	61.9	0.45	1.68	26.8	0.94	1.65	56.9	0.78	1.16	67.2	1.71	2.27	75.3	0.83	1.78	46.6	55.8
January 1934	0.90	1.66	54.2	0.67	1.72	38.9	0.50	1.44	34.7	0.62	1.39	44.6	0.79	1.98	39.9	0.89	1.64	54.3	44.4
February 1934	0.34	1.52	22.4	0.19	1.71	11.1	0.26	1.38	18.8	0.28	1.43	19.6	0.34	1.91	17.8	0.17	1.67	10.2	16.65
March 1934	0.85	2.49	34.1	0.72	2.43	29.6	0.83	2.36	35.2	0.59	2.10	28.1	0.85	2.60	32.7	0.55	2.62	21.0	30.1
April 1934	1.26	2.93	43.0	1.06	2.81	37.7	1.40	3.22	43.5	1.32	3.73	35.4	1.60	3.08	51.9	1.37	3.20	42.8	42.4
May 1934	0.48	4.27	11.3	0.42	3.53	11.9	0.83	3.48	23.9	0.57	2.73	20.9	0.68	3.92	17.3	0.59	3.91	15.1	16.7
June 1934	5.21	3.79	137.5	3.84	4.14	92.8	2.69	3.98	67.6	3.46	5.99	57.8	2.49	4.19	59.4	2.06	4.18	49.3	77.4
Mean—Nov. to May, inclusive			34.5			27.7			32.3			32.7			36.7			29.9	32.1
Mean—Aug. '33 to May '34, incl.			43.7			35.1			39.3			36.3			43.9			39.4	39.5
June '33 to May '34, incl.			46.6			45.35			47.6			45.0			56.4			47.65	48.0

TABLE 6.
SANGAMON RIVER RAINFALL IN 1933-34 DROUTH IN INCHES
Showing percentage of Actual to Normal Rainfall

MONTH	BLOOMINGTON			DECATUR			LINCOLN			MORRISONVILLE			PANA			SPRINGFIELD			Mean %
	Actual	Normal	%	Actual	Normal	%	Actual	Normal	%	Actual	Normal	%	Actual	Normal	%	Actual	Normal	%	
August 1933	1.81	3.31	54.7	1.95	3.39	57.7	2.68	3.07	87.3	2.84	3.23	87.9	4.66	3.66	127.3	2.34	3.17	73.8	84.45
September 1933	5.52	4.02	137.3	4.88	3.87	126.1	4.42	3.93	112.5	3.74	3.48	107.5	3.44	3.74	92.0	5.05	3.64	139.0	191.1
October 1933	4.55	2.29	198.7	4.12	2.60	158.5	3.50	2.37	147.7	3.97	2.65	150.0	3.70	2.93	126.3	2.38	2.43	96.7	146.3
November 1933	0.58	2.54	22.8	0.71	2.41	29.5	0.02	2.34	0.9	1.33	2.35	56.6	0.65	3.04	21.4	0.28	2.52	11.1	23.7
December 1933	0.97	2.06	47.1	0.95	2.27	41.8	1.49	1.98	75.3	0.43	2.10	20.5	1.28	2.51	51.0	0.91	2.18	41.7	46.2
January 1934	1.29	2.06	62.6	1.34	2.34	57.3	1.07	2.12	50.5	1.06	2.24	47.3	1.47	2.48	59.3	1.33	2.10	63.3	56.7
February 1934	0.62	1.81	34.3	0.86	1.95	44.1	0.96	1.83	52.5	0.69	1.74	39.7	1.08	2.44	44.3	0.90	2.33	38.6	42.25
March 1934	2.09	3.17	65.9	3.32	3.42	97.1	3.32	3.06	108.5	2.44	3.22	75.8	1.71	3.37	50.7	3.50	3.17	110.4	84.7
April 1934	1.13	3.86	29.3	0.94	3.64	25.8	0.97	3.49	27.8	1.29	3.60	35.0	1.16	3.85	30.1	1.21	3.51	34.5	30.4
May 1934	0.43	4.13	10.4	0.30	3.92	7.7	0.74	4.19	17.6	1.14	4.16	27.4	0.64	4.29	14.9	0.32	4.38	7.3	14.2
June 1934	2.02	3.94	51.3	0.53	3.64	14.6	0.91	3.85	23.6	1.24	4.18	29.6	1.69	4.42	38.2	3.29	4.06	81.0	39.7
July 1934	0.58	3.32	17.5	0.28	3.23	8.7	1.79	3.29	54.4	0.90	3.46	26.0	0.74	3.45	21.4	0.42	2.86	14.7	23.8
August 1934	4.70	3.31	142.0	4.07	3.39	120.1	4.34	3.05	142.3	5.03	3.33	151.1	6.55	3.66	178.9	3.62	3.17	114.2	141.4
Mean rainfall November 1, 1933 to June 1, 1934																			42.6

The extreme lack of rainfall as affecting our rivers is furthermore shown in Tables 4, 5 and 6 on the Fox, Rock and Sangamon Rivers respectively.

Table 4 gives the actual and normal rainfall and the percentage of actual to normal on the records at three towns—Aurora, Elgin and Ottawa. This shows that in the climax period from November, 1933, to May, 1934, the actual rainfall was 33.3% of the normal.

Table 5 shows the rainfall for the same period over the Rock River Valley based on the records at six towns to average 32.1% of the normal rainfall.

Table 6 for the Sangamon Valley based on six towns shows for the same period of seven months a mean of 42.6% of the normal rainfall.

EFFECT ON STREAM DISCHARGE.

This lack of rainfall, and high temperature causing increased evaporation and excess transpiration, has had a tremendous effect on the runoff of our streams, as is shown below in regard to the Fox River and the Rock River. To show the long time effect on runoff, the comparison is shown below on both rivers of the runoff for the five year period from 1925 to 1929 and the recent five year period from 1930 to 1934 (all years ending on September 30th) with the percentage of decrease

	1925-29	1930-34	Decrease
Fox River at Algonquin	1099 c.f.s.	471 c.f.s.	57.1%
Rock River at Lyndon	6932 "	3548 "	48.8%

This is again a clear indication that the drouth should be called the ''Drouth of 1930-34. However, its effect has been more noticeable in 1934 because of the long continued dry spell with its consequent lowering of the ground water to a point below the drain tiles, and in many instances below the creek bed, so that drainage and ground water could not reach the stream.

FOX RIVER RUNOFF.

The above is the effect on the mean annual flow. Let us delve further into the runoff or discharge of the Fox by Table 7 which gives the mean monthly flow for each month from October, 1915, to October, 1934. This is obtained from the records of the Water Resources Branch of the U. S. Geological Survey by kindness of Mr. J. H. Morgan, U. S. District Engineer and a member of this Society. The years as given in these records extend from October 1st to September 30th. The area of watershed at Algonquin is 1,340 square miles. From this we see the very low flow of May 1st to October 1st, 1934, the average being only 80 c.f.s. per month and the lowest, in September, being only 52.9 c.f.s. for the month.

TABLE 7.

MEAN MONTHLY DISCHARGE OF FOX RIVER AT ALGONQUIN IN CUBIC FEET PER SECOND

From U. S. G. S. Records

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	MEAN ANNUAL
1916	1,470	616	718	1,260	1,790	1,580	2,710	714	1,530	412	287	410	1,120
1917	690	929	691	410	340	1,280	1,250	989	860	864	489	340	764
1918	591	983	325	279	406	4,160	1,250	837	448	229	111	148	818
1919	199	327	483	454	611	2,430	1,580	1,610	456	318	185	232	741
1920	819	1,350	685	410	382	2,570	3,130	918	355	364	267	271	960
1921	286	393	420	461	438	1,040	1,440	1,980	314	192	173	724	657
1922	1,430	1,510	1,850	1,280	720	2,090	2,460	743	418	288	181	302	1,110
1923	324	401	441	365	371	1,190	2,270	423	270	193	235	467	578
1924	819	783	732	546	559	1,630	2,440	1,210	971	1,310	2,960	1,330	1,280
1925	552	378	427	264	997	1,440	680	636	174	254			
1926	350	500	350	400	850	1,400	1,900	600	700	418	384	830	720
1927	1,490	1,410	1,110	486	2,180	1,700	2,030	1,670	1,140	292	238	262	1,160
1928	987	752	773	757	940	1,230	2,140	595	695	1,650	492	421	953
1929	362	1,400	1,750	991	584	3,660	3,210	1,870	1,010	555	722	364	1,374
1930	536	755	427	527	931	1,140	1,320	937	356	234	172	124	619
1931	295	339	283	260	354	420	386	215	331	169	83.8	78.7	273
1932	164	643	877	1,070	724	784	897	379	205	220	112	99.6	522
1933	165	419	336	499	472	588	1,770	2,650	1.100	500	220	144	739
1934	205	447	284	345	235	274	237	150	110	57.7	31.4	52.9	202

1924 to 1929 inclusive (excepting 1925) mean annual discharge 1099 c. f. s.

1930 to 1934 inclusive mean annual discharge 471 c. f. s

However, even this does not fully present the picture of low flow. Let us therefore consider the extreme low flow which is the lowest *daily* flow for each month. On this basis we have the following:

Year	Low Daily Flow
1916	209 c. f. s.
1917	279
1918	67
1919	117
1920	215
1921	117
1922	111
1923	123
1924	355

Year	Low Daily Flow
1925	1.13 c. f. s.
1926	Incomplete
1927	84
1928	210
1929	240
1930	54
1931	47
1932	81
1933	80
1934	12

From this we see that during the last five years—the ''Drouth of 1930-1934'' the average *low daily* flow has dropped to a mean of 55 c.f.s., while in 1934 the low daily flow was only 12 c.f.s. This means for the entire five year period an average runoff of 4% of one cubic foot per second per square mile of watershed for the low daily flow.

The low flow of 1934 of 12 c.f.s. likewise means a runoff of 9/10 of 1% of c.f.s. per square mile. Moreover on August 23, 1934, for one hour the discharge was only 1 c.f.s. or 0.075% of 1 c.f.s. per square mile.

The consequence of this great shortage of water on the Fox River has been that the stream, ordinarily a beautiful body of water 300 to 400 feet wide, was for many months a tiny creek with vast expanse of exposed slimy bottom on each side; no water for power users at the various dams, and the flow seldom reaching or approaching the crest of the dams, practically all of the little flow available going through the dams by leakage. On many days and in many places, it was possible to cross the river on foot practically dry shod.

ROCK RIVER.

Rock River, from records at Lyndon, in Table 8, is also shown the monthly and annual mean flow. Without going into details, the mean monthly flow for year ending September 30, 1934, was 1801 c.f.s., which amounts to a mean monthly runoff of 20% of 1 c.f.s. per square mile on the 9,010 square mile watershed area.

The lowest daily flow of 498 c.f.s. corresponds to a runoff of only 5½% of 1 c.f.s. per square mile, and the lowest flow recorded during the year was 465 c.f.s. on August 21, 1934, which means a runoff of only 5.1% of 1 c.f.s. per square mile. Note that this low record was made on August 21st and the low record on the Fox was made but two days later, indicating the climax of the drouth.

SANGAMON RIVER.

While Table 6 gives the rainfall record for the Sangamon Valley, it is impossible at present to give discharge records as the climax period of 1934 has not yet been completely tabulated. It is, however, very similar to the Fox and Rock Rivers.

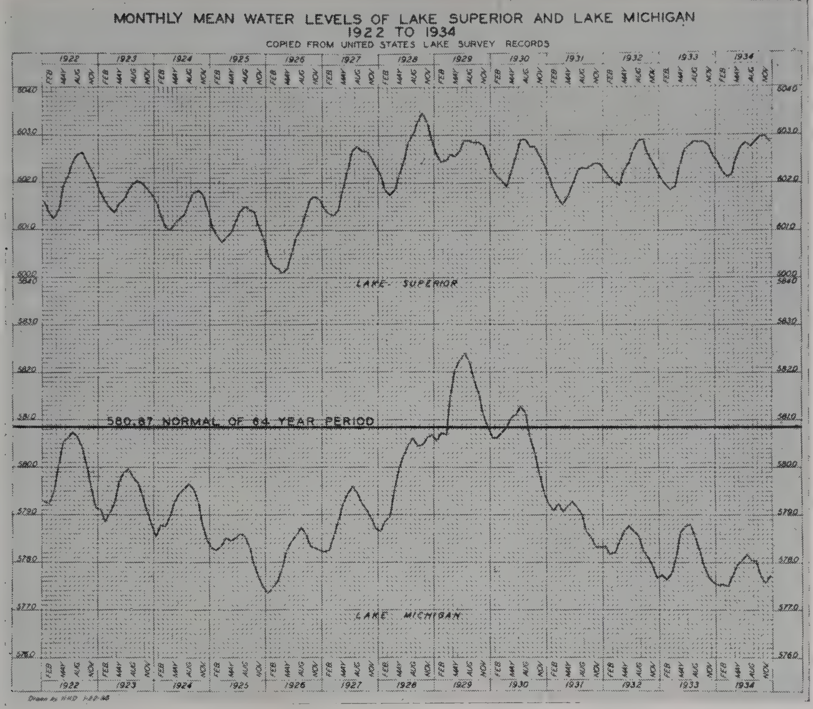
TABLE 8.
MEAN MONTHLY DISCHARGE OF ROCK RIVER AT LYNDEN IN CUBIC FEET PER SECOND

From U. S. G. S. Records

YEAR	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	MEAN ANNUAL
1916	7,480	4,010	5,710	11,300	15,000	12,100	14,000	7,020	10,700	3,610	2,360	3,350	8,020
1917	3,740	4,500	4,060	2,690	2,620	12,000	8,060	5,710	9,840	7,840	2,570	2,450	5,520
1918	2,960	3,920	3,560	2,790	17,800	20,500	8,320	5,550	3,580	1,990	1,720	1,520	6,110
1919	1,400	1,930	2,380	3,550	3,300	15,700	7,400	10,100	3,860	2,300	2,490	2,610	4,770
1920	6,520	8,160	9,560	3,200	3,880	21,300	15,500	7,290	5,780	3,810	2,430		
1921	2,270	2,390	2,950	5,200	3,000	4,980	7,850	8,200	3,190	2,160	3,180	5,470	4,270
1922	5,780	5,140	8,590	9,380	10,800	16,500	17,300	6,970	4,500	4,730	2,530	2,340	
1923		2,420	3,120	3,420	3,520	10,900	16,700	4,390	2,520	1,930			
1924	2,260	2,290	2,430	4,370	5,200	8,570	8,930	4,580	5,390	5,080	13,700	6,330	5,760
1925	3,010	2,340	3,280	2,150	12,700	8,090	3,800	2,730	2,540	2,220	2,160	1,210	3,800
1926	1,890	2,760	3,290	4,110	7,770	7,850	10,200	3,800	6,490	3,150	3,170	5,790	4,980
1927	7,110	7,520	10,000	5,860	13,900	9,860	12,000	14,400	11,100	3,780	2,710	3,430	8,472
1928	9,960	5,600	9,030	12,300	12,400	9,710	11,500	4,430	4,440	6,010	4,990	3,630	7,820
1929	4,030	9,040	10,100	7,040	7,500	28,300	20,100	10,100	6,840	5,000	4,030	2,800	9,590
1930	3,140	4,210	2,550	2,700	6,890	7,370	6,550	5,350	4,470	2,580	2,050	2,170	4,140
1931	2,790	1,960	2,040	2,120	2,670	2,260	2,850	2,240	2,290	1,340	1,130	1,690	2,110
1932	3,740	6,140	7,240	7,220	5,170	7,160	6,740	3,860	3,890	2,420	1,570	1,410	4,710
1933	1,760	1,800	3,150	3,730	3,060	3,210	11,000	15,800	5,960	5,850	2,420	1,910	4,980
1934	1,857	1,880	1,742	2,691	1,739	1,988	3,243	1,489	1,245	1,638	870	1,238	1,801

1925 to 1929 inclusive, mean annual discharge 6932 c. f. s.
1930 to 1934 inclusive, mean annual discharge 3548 c. f. s.

Chart 2.



LAKE MICHIGAN.

While this paper is nominally concerned with Illinois only, it may be well to include a few remarks about our bordering Lake Michigan.

The natural lag of a large body of water in receiving its inflow after or during a drouth is of course longer or slower than that of a stream.

To show the annual and periodical fluctuations of level of Lake Michigan, I am including Chart 2 which shows the monthly changes in the lake level from 1922 to date. Lake Michigan of course gets most of its water from Lake Superior and its watershed. For the last few years the flucuations of Lake Michigan have been very rapid. As will be seen, in January, 1926, the lake was at the lowest level of a record extending back to 1860. After the wet years of 1922 to 1926, the lake level quickly rose till in August, 1929, it was five feet higher than in 1926 and was at the highest stage for 43 years. This was due partly to the fact that the water in Lake Superior is controlled at the Soo between certain levels and at this time a large excess was turned into Lakes Huron and Michigan.

Then with the dry years, Lake Michigan fell just as rapidly as had been the previous rise until in March, 1934, it was only about .05

of a foot above its low point of 1926. During the following months the annual summer rise only increased the stage about 9 inches after which it again fell to a point in November but 0.16 above the extreme low. The usual low point of the annual cycle occurs in January or February, but the December, 1934, stage showed an increase of 0.15 over the November stage. Whether this means that we are beyond the low point of the present cycle or not is a question.

Unless we have much more than normal rain and snow this winter and this coming spring, it is very possible that the drouth may continue for another season and that Lake Michigan may recede still further. However, reports indicate that snow fall on the Lake Superior watershed has been extremely heavy for the winter so far, and in consequence the lake level may again be on the upward side of another important rise.

The importance of this stage of the lake lies in the fact that by opinion of the Attorney General, the line of demarkation between private and public property on the lake shore is that point at which the water *normally* stands when in an undisturbed condition. The normal elevation of the lake based on the record of 64 years is at elevation 580.87. The present stage is at elevation 577.73. This means that the waters edge today is 3.14 feet below normal. On the flat beaches between Chicago and the Wisconsin line, this means some 200 to 300 feet of beach outside the normal water line which many of the riparian owners consider as belonging to them and which in reality belongs to the State in trust for the people as land outside the normal shore line.

In closing, it is by no means certain as yet that the drouth is over. The ground water level in Illinois has not yet reached its normal stage, and unless we have continued heavy snows and heavy soaking rains, rather than cloud bursts or showers which run off quickly without much penetration into the ground, we are likely to have another summer of drouth with all of its accompanying evils. However, the slight rise in lake levels, coming a month or two earlier than usual, give indications that conditions may improve and that the climax of the drouth has passed.

In 1929 the writer predicted that the lake, which at the time was at its high stage, would probably go higher during the next year. This prediction was wrong, but he hopes that his present prediction of the end of the drouth period will not be equally wrong, and that the coming summer will see the drouth ended and conditions materially improved for agriculture, for municipal water supplies and for the good of the people.

BUREAU OF WATER TERMINAL CONSTRUCTION.

C. M. Briggs, *Terminal Engineer.*

CHICAGO PACKAGE FREIGHT TERMINAL.

Early in 1933 under instructions from the Director this Division drafted House Bill No. 977, which was filed July, 1933. This bill provided for the construction of the Package Freight Terminal to be paid for out of funds furnished by the Illinois Central and the A. T. & S. F. railroads in accordance with their contract with the State of Illinois covering exchange of certain properties.

The design of this structure was started and carried forward with the advice and criticism of operators of transportation lines and terminals. Considerable time was spent in the revision and study of the proper location and possibilities of the site.

Definite orders were received in September, 1933, to proceed with the plans and specifications for the building for the purpose of asking for proposals for this construction. Work on the building and design was started October 1, 1933, and advertising was made on November 11, 1933, and proposals received on November 28th.

The Chicago River and Indiana Railroad, a belt line subsidiary of the New York Central, had certain leasehold rights in the properties which required adjustment. Negotiations were carried on, with legal guidance of the Attorney General's office, which resulted in certain revisions in the track layout for the terminal and ultimate agreement of the railroad company to serve the terminal property in a satisfactory manner. This agreement provides adequate belt line rail outlet to the terminal and makes permissible complete truck, rail and barge interchange at this point. Subsequent to completion of this agreement the contracts were awarded for the construction and the work was started on May 15, 1934, and has since been carried out without delay.

In conjunction with the preparations of the final working plans a complete land survey was made of the properties, including location and referencing all property monuments and elevations of all portions of the property from which a contour map was produced. This work was accomplished by the CWA party under the direction of this Division.

OTTAWA TERMINAL.

The City of Ottawa desired to lease a portion of the State property between LaSalle Street and the C. B. & Q. Railroad bridge for the purpose of constructing a public landing. Under instructions by the Director surveys were made of the property and sketches drawn for a combined grain and package freight landing. Since the City of Ottawa had no funds available to construct adequate facilities and could only furnish labor, a request was returned from the City of Ottawa to lease this property for a playground. Several grain corporations desired the use of this land for loading grain into barges. Ultimately a temporary lease was made to two grain companies, thereby providing practical use of the river front until conditions are more favorable for its best use.

CENTURY OF PROGRESS EXHIBIT.

The Division was requested to cooperate with the parties in charge of the State exhibit in the Hall of States, and accordingly furnished sketches, photographs and voice recording for the balopticon together with plans and pictures of Lockport and Starved Rock locks from which dioramas were constructed. At the close of the exposition this Bureau assisted in arranging for the crating and shipment of this material to be put in storage. On the reopening of the exhibition in 1934 this Division cooperated with the Architectural Division in reinstallation of the equipment.

SURVEY OF SLIPS ON THE CHICAGO RIVER.

At the request of the Director a precursory survey has been made of the slips and docks in the south branch of the Chicago River between the Dupont Slip east of Halsted and the Collateral Channel east of South Albany to ascertain, in a general way, the condition of the bulkheads and use of the slips and in the particular the title to the adjoining properties. An exact survey will be required to learn the sub-surface conditions and at present there is no personnel available to conduct such a survey, as there are about six miles of channel to be sounded and discrepancies in existing plats indicate that the exact property lines can only be determined by an extensive land survey.

HYDRO-ELECTRIC POWER.

Under the amendment to the constitution passed in 1908 the Legislature passed the Illinois Waterway Act, which was approved by the Governor June 17, 1919, containing the following provisions:

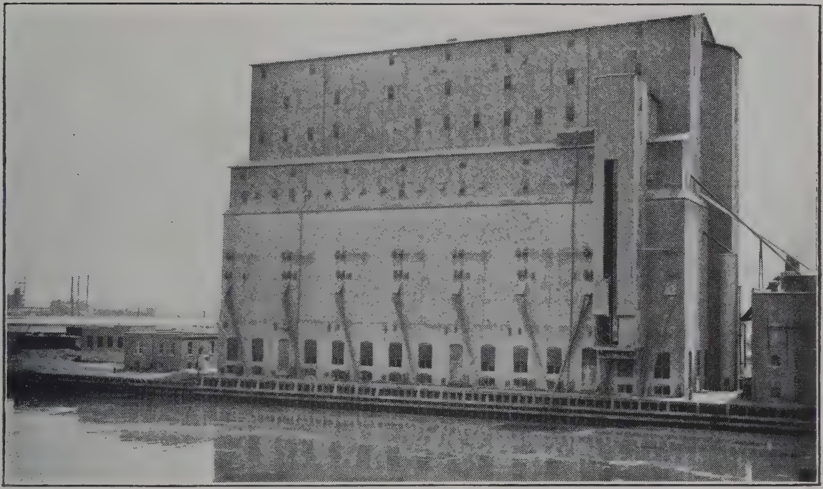
> Sec. 7 Par. "(3) To use or lease, in whole or in part, the surplus waters of such waterway and its appurtenances or the power developed therefrom.
>
> "(4) To construct, maintain and operate power plants, structures, buildings and appliances relative thereto for the utilization of the surplus water arising from the construction, maintenance or operation of the waterway, and to lease, sell or otherwise dispose of the whole or any part of the electrical current or energy thereby generated."

In accordance with instructions, from the late Chief Engineer, L. D. Cornish, this Division drafted an Act for the purpose of carrying out those provisions. Work was carried on in the design of the hydro-electric stations until July 1, 1933, discontinued under instructions from the Director, bill having passed the Senate but not having been called in the House at the time of adjournment. Since that time nothing has been done on the design. However, this Division has answered numerous requests for information from the Federal Power Commission and has cooperated with them and with the War

Department in its request for data covering details of the projects. The Federal Power Commission rescinded the permit for these projects pending formal hearing of the complaints of the Attorneys General of four lake States. The Power Commission assures this Division that the hearing is a formality and that the permit will be reissued at such time as requested by the State of Illinois.

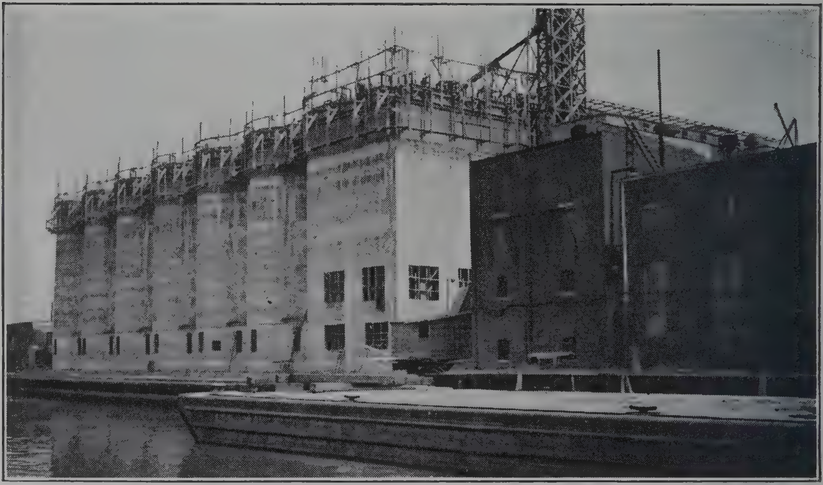
SANTA FE GRAIN ELEVATOR.

By instructions from the Director, this Division furnished inspection during the reconstruction of the Santa Fe Grain Elevator, which was destroyed by fire on December 22, 1932. The elevator is now complete and in operation.



Santa Fe Elevator before the fire.

Santa Fe Elevator completed after fire.



Santa Fe Elevator during reconstruction.

BUREAU OF ILLINOIS AND MICHIGAN CANAL.

JOHN A. WALTER, *Auditor.*

There was no income from water power rentals during the past year and due to economic conditions, which materially reduced rental collections of the canal reserve, also the discontinuance of the Traction line between Joliet and LaSalle, which had a belt line and bridge leases on canal property, were conditions which resulted in the reduced income the past year.

Expenditures were approximately the same as the previous year, and there is now on hand in the special canal fund $66,428.65 more than was on hand when the Division of Waterways assumed charge of the canal under the Civil Administrative Code.

No tolls were collected as there was no navigation on the canal, and during the season there were no operations of the canal dredge, which is moored in canal near Rockdale, the tow boat being used from time to time on waterway bridge construction at Joliet.

Three new leases were made of canal reserve for dwelling purposes. A new lease for a gas main on the canal reserve in LaSalle County at rental of $100.00 per year was made and the land at Lockport formerly used as a canal repair yard was leased at $300.00 per year for storage of coke. Two pole line leases were made with the Illinois Bell Telephone Company in place of former verbal leases. Eight certified copies of pages of the land sale book, to each of which was attached photostat of the pages of the original sale book, were furnished.

Repairs to lock and waste gates, spillways, leaks in bank, culverts and minor repairs to locktender houses were made. A bathroom outfit and a new roof on locktenders house at LaSalle were added.

Projects for repair of all canal structures and the canal by the C.W.A., in LaSalle, Grundy and Will Counties, were approved by the C.W.A., but no work was done in LaSalle and Grundy Counties. Work was started on this work in Will County, but all operations were discontinued in February.

Three C.W.A. tracers started tracing the original 1847-1848 Field Notes and had completed 81 per cent of the work up to February 21, when the work was suspended.

Much of our activities the past year were given to C.C.C. and C.W.A. work along the canal.

Three canal highway bridges at Dresden, Channahon and Aux Sable were lowered by C.C.C. Camp No. 3 and the Division of Highways is erecting new canal bridges at Brandon Road and Birds Bridge.

Barricades and trespassing signs were erected along the canal in Chicago.

The canal, its reserves and feeders consists of approximately 1,700 acres of land, which reserves have been developed into park areas and the canal itself into a pleasure waterway from the city limits of Chicago to Peru.

Numerous foot bridges have been built to give access to trails and picnic areas at various points along the canal. Shelter and comfort stations have been built to accommodate the public. At Channahon the DuPage River dam has been repaired and the method of water control has been so changed to feed pure DuPage River water into the canal from Channahon to Peru, and wasting all Sanitary District water into the DesPlaines at this point.

The Civilian Conservation Corps has changed the reserves from a condition of being inaccessible and overgrown with weeds and thick brush to a condition of being readily accessible and a thing of beauty, and a monument to their efforts.

A financial report of the canal follows:

STATE OF ILLINOIS
DEPARTMENT OF PUBLIC WORKS AND BUILDINGS
DIVISION OF WATERWAYS.

ILLINOIS-MICHIGAN CANAL FUND—FINANCES FOR FISCAL YEAR

July 1, 1933 to June 30, 1934.

REVENUES.

CASH BALANCE IN FUND—JUNE 30, 1934		
Treasurer's Balance July 1, 1933	$89,322.69	
DEDUCT—Warrants outstanding July 1, 1933	2,254.98	
Treasurer's Net Balance July 1, 1933	$87,067.71	
DEDUCT—Vouchers in Transit 57th G. A. July 1, 1933	465.95	
Net Balance in Fund July 1, 1933	$86,601.76	
DEDUCT—Vouchers issued by Division 57th G. A. July 1, 1933 to September 30, 1933	3.00	
Net Balance in Fund July 1, 1933 after all Vouchers Paid	$86,598.76	$86,855.16
DEDUCT—Vouchers issued by Division 58th G. A. July 1, 1933 to June 30, 1934	24,133.08	24,133.08
	$62,465.68	$62,722.08
ADD—Collections Deposited by Division July 1, 1933 to June 30, 1934	16,010.85	16,010.85
	$78,476.53	$78,732.93
Net Balance in Illinois & Michigan Canal Fund June 30, 1934	$78,476.53	$78,732.93

STATE OF ILLINOIS
DEPARTMENT OF PUBLIC WORKS AND BUILDINGS
DIVISION OF WATERWAYS.

SCHEDULE OF VOUCHERS ISSUED AGAINST I. & M. CANAL FUND 58th G. A.

July 1, 1933 to June 30, 1934.

Month	Total	Administration and Engineering	Operation	Maintenance	Equipment
July, 1933	$ 1,766.35	$ 327.50	$ 575.25	$ 863.60	
August	1,973.06	402.16	588.22	982.68	
September	1,926.41	408.68	593.56	924.17	
October	1,931.48	403.21	591.01	937.26	
November	1,993.91	451.80	593.55	948.56	
December	1,904.37	416.66	589.13	898.58	
January, 1934	2,221.93	664.58	597.64	940.57	$ 19.14
February	1,876.44	402.85	587.65	885.94	
March	2,237.46	497.03	589.25	1,151.18	
April	1,931.12	410.71	589.22	931.19	
May	2,309.78	531.40	593.21	1,185.17	
June	2,060.77	416.90	593.80	1,050.07	
	$24,133.08	$ 5,333.48	$ 7,081.49	$11,698.97	$ 19.14

STATE OF ILLINOIS
DEPARTMENT OF PUBLIC WORKS AND BUILDINGS
DIVISION OF WATERWAYS.

SUMMARY OF ILLINOIS AND MICHIGAN CANAL LEASES.

Class of Lease.	Total Number of Leases	Total Amount Due Annually	Paid up Leases.		Delinquent, but Considered Collectable Leases.		Delinquent and Considered Uncollectable Leases.		Discontinued and Delinquent Leases.	
			No.	Amount	No.	Amount in Arrears.	No.	Amount in Arrears.	No.	Amount in Arrears.
Bill-board Leases	4	$ 62.50	4	$ 62.50					2	$ 20.00
Bridge Leases	15	2,029.67	15	1,650.00					2	404.67
Gas Main Leases	4	152.00	4	152.00						
Land Leases	127	7,112.50	86	3,898.50	12	$2,360.00	29	$754.00	8	30.00
Land and House Leases	2	196.00	2	196.00					2	55.00
Pole Line Leases	8	707.57	8	707.57						
Railroad R-W Leases	1	600.00	1	600.00						
Switch Track Leases	3	1,550.00	3	1,550.00						
Terminal Leases										
Water Pipe Leases	12	5,655.00	9	1,880.00	3	19,550.00			1	36.00
Well Leases	2	35.00	1	25.00	1	10.00				
Totals	178	$18,100.24	133	$10,721.57	16	$21,920.00	29	$754.00	15	$545.67

REMARKS: This tabulation represents a summary of all leases in effect and discontinued, classified according to the type or kind of lease. The total amount due on leases in arrears is $23,219.67.

I. & M. CANAL

SCHEDULE OF BILL BOARD LEASES ON AN ANNUAL BASIS.

PAID UP LEASES.

Date of Execution	Date of Expiration	Name of Lessee.	Number of Bill Boards	Location	Annual Rental Rate	Date Paid To	Amount in Arrears	Remarks
7-15-23	7-15-35	Illinois Posting Service	1	Sec. 11, Twp. 33, R 3	$5.00	7- 5-34		
9- 1-23	9- 1-35	Illinois Posting Service	1	Sec. 23, Twp. 33, R 5	5.00	9- 1-34		
8- 1-23	8- 1-35	Illinois Posting Service	1	Sec. 11, Twp. 33, R. 3	40.00	8- 1-34		
4-15-24	4-15-36	Illinois Posting Service	1	Sec. 11, Twp. 33, R. 3	12.50	4-15-35		
		Total	4	Total	$62.50			

DISCONTINUED LEASES.

Date of Execution	Date of Expiration	Name of Lessee.	Number of Bill Boards	Location	Annual Rental Rate	Date Paid To	Amount in Arrears	Remarks
5-12-28	5-12-35	Ball Bros.	1	Sec. 9, Twp. 35, R. 10	10.00	5-12-33	$10.00	Boards Removed
7-14-23	7-14-34	Ball Bros.	1	Sec. 20—Twp. 35, R. 10 Sec. 21—	10.00	7-14-33	10.00	Boards. Removed.
		Total	2	Total	$20.00		$20.00	

I. & M. CANAL
SCHEDULE OF BRIDGE LEASES ON AN ANNUAL BASIS.
PAID UP LEASES.

Date of Execution	Date of Expiration	Name of Lessee	Location	Annual Rental Rate	Date Paid To	Amount in Arrears	Remarks
4-25-22	4-25-36	A.T. & S.F. Ry Company	Sec. 3 Twp. 35 R. 10	$100.00	4-25-35		
3- 1-10	3- 1-36	Chgo. Retort & Fire Brick Co.	Sec. 12 Twp. 33 R. 3	25.00	3- 1-35		
10-15-33	10-15-35	C.R.I. & P. Ry. Company	Sec. 10 Twp. 33 R. 3	100.00	10-15-34		
5- 1-20	5- 1-35	C.R.I. & P. Ry. Company	Sec. 19 Twp. 35 R. 10	100.00	5- 1-34		
2-15-25	2-15-45	C.R.I. & P. Ry. Company	Sec. 3— Sec. 10—Twp. 33 R. 7 Sec. 9— Sec. 4—	350.00	2-15-35		
10- 6-22	10- 6-42	Corn Products Refining Co.	Sec. 23 Twp. 38 R. 12	150.00	10- 6-34		
7-25-22	7-25-35	Globe Oil & Refining Co.	Sec. 26 Twp. 37 R. 10	100.00	7-25-34		
7- 1-8	7- 1-35	Illinois Steel Co.	Sec. 34 Twp. 36 R. 10	100.00	7- 1-34		
7-30-18	7-30-35	Northern Ill. Cereal Co.	Sec. 23 Twp. 36 R. 10	100.00	7-30-34		
7-30-18	7-30-35	The Texas Co.	Sec. 14 Twp. 36 R. 10	100.00	7-30-34		
11-10-33	6-30-37	The Texas Co.	Sec. 14 Twp. 36 R. 10	100.00	11-10-34		
1-29-10	1-29-36	Chicago Junction Ry. Co.	Sec. 36 Twp. 39 R. 13	100.00	1-29-35		
4-16-18	4-16-35	Illinois Stone Co.	Sec. 21 Twp. 37 R. 11	100.00	4-16-35		
12- 8-23	12- 8-43	Illinois Traction Co.	Sec. 13 Twp. 33 R. 4	100.00	12- 8-34		
5- 2-23	5- 2-35	Chgo. Retort & Fire Brick Co.	Sec. 12 Twp. 33 R. 3	25.00	5- 2-34		
		Total		$1,650.00			

DISCONTINUED LEASES.

Date of Execution	Date of Expiration	Name of Lessee	Location	Annual Rental Rate	Date Paid To	Amount in Arrears	Remarks
1- 1-33	1- 1-35	Chgo. & Joliet Elec. Ry. Co.	Sec. 14 Twp. 37 R. 11	$100.00	1- 1-34		Out of Business.
4- 1-14	4- 1-35	Chgo. Ottawa & Peoria Ry Co.	Sec. 20 Twp. 33 R. 5	279.67	4- 1-34		Out of Business.
		Total		$379.67			

SCHEDULE OF GAS MAIN LEASES ON AN ANNUAL BASIS.
PAID UP LEASES.
I. & M. CANAL

Date of Execution	Date of Expiration	Name of Lessee	Location	Annual Rental Rate	Date Paid To
10- 8-03	10- 8-35	Public Service Company	Across Hydraulic basin & Canal lands near Ottawa	$50.00	10- 8-34
6- 1-31	6- 1-51	Public Service Company	Sec. 7 Twp. 33 R. 4	100.00	6- 1-35
9-24-24	9-24-35	Western United Gas & Elec. Co.	Sec. 26 Twp. 36 R. 10	1.00	9-24-34
10-10-25	10-10-35	Western United Gas & Elec. Co.	Sec. 23 Twp. 36 R. 10	1.00	10-10-34
		Total		$152.00	

I. & M. CANAL
SCHEDULE OF LAND LEASES AND RENTALS ON AN ANNUAL BASIS.
PAID UP LEASES.

Date of Execution	Date of Expiration	Name of Lessee	Description of Land	Annual Rental Rate	Date Paid to	Remarks
10– 1–30	10– 1–36	Abugelis, A. & Wife	75′x100′ Sec. 12 Twp. 38 R12	$15.00	10– 1–34	
1–12–20	1–12–36	Anderson, Mrs. B.	52′x 98′ Sec. 9 Twp. 32 R 2	10.00	1–12–35	
6–10–19	6–10–35	Arthur, Harry R.	50′x 75′ Sec. 20 Twp. 34 R 9	5.00	6–10–35	
5–22–30	5–22–35	Ashley, J. & Wife	75′x100′ Sec. 35 Twp. 39 R13	15.00	5–22–35	To be leased to Vic. Dudek after May May 22, 1935.
1– 2–20	1– 2–36	Averill, M. & Wife	75′x100′ Sec. 3 Twp. 33 R 7	10.00	1– 2–35	
1–12–20	1–12–36	Bain, K. G. & Wife	66′x 90′ Sec. 9 Twp. 33 R 2	10.00	1–12–35	
8–12–19	8–12–35	Barber, W. H. Co.	75′x350′ Sec. 35 Twp. 39 R13	48.00	8–12–34	
5–28–33	5–28–35	Baricobich, M. & Wife	75′x200′ Sec. 13 Twp. 38 R12	30.00	5–28–35	
1– 5–05	1– 5–36	Barrows Lock Co.	Vac. St. End Sec. 23 Twp. 36 R10	15.00	1–15–35	
1–24–22	1–24–36	Bergan, Chas. & Wife	75′x300′ Sec. 15 Twp. 37 R11	10.00	1–24–35	
4–24–31	4–24–35	Bibly, Paul & Wife	75′x100′ Sec. 13 Twp. 38 R12	15.00	4–24–35	
9–15–32	9–15–35	Button, E. & Wife	75′x100′ Sec. 3 Twp. 33 R 7	15.00	9–15–34	
1– 2–20	1– 2–36	Button, Floyd & Wife	75′x100′ Sec. 3 Twp. 33 R 7	10.00	1– 2–35	
4– 6–31	4– 6–35	Button, Geo. A. & Wife	75′x100′ Sec. 3 Twp. 33 R 7	15.00	4– 6–35	
4– 5–05	4– 5–35	C. R. I. & P. Ry. Co.	30′x 50′ Sec. 10 Twp. 33 R 7	25.00	4– 5–35	
9–17–30	9–17–35	Cook, C. D. et al	50′x150′ Sec. 25 Twp. 6 R 5	15.00	9–17–34	
1–12–29	1–12–36	Dalton, Chas.	90′x 90′ Sec. 9 Twp. 33 R 2	15.00	1–12–35	Formerly leased by Mrs. F. Prentice.
1–12–20	1–12–36	Eastman, J. & Wife	64′x 90′ Sec. 9 Twp. 33 R 2	10.00	1–12–35	
1–12–32	1–12–36	Enburg, Chas. & Wife	70′x 90′ Sec. 9 Twp. 33 R 2	15.00	1–12–35	
9– 5–31	9– 5–35	Fisher, F. & Wife	75′x100′ Sec. 3 Twp. 33 R 7	15.00	9– 5–34	
2–16–34	2–16–36	Findley J. & Wife	75′x200′ Sec. 35 Twp. 39 R13	30.00	2–16–35	
7– 1–22	7– 1–35	Gedye C. & Wife	20′x 55′ Sec. 15 Twp. 33 R 1	10.00	7– 1–34	
5–10–24	5–10–35	Gedye C. & Wife	14′x 18′ Sec. 15 Twp. 33 R 1	10.00	5–10–35	
6–25–34	6–25–35	Granados, F. & Wife	83′x100′ Sec. 10 Twp. 33 R 3	15.00	6–25–35	
6– 7–33	6– 7–33	Great Lakes Coal & Coke Co.	Blk. 103, Pt. Blk. 102 Sec. 23 Twp. 36 R10	300.00	6– 7–34	
5– 1–33	5– 1–35	Great Lakes Dredge & Dock Co.	Lot 7, Blk. 12 Sec. 29 Twp. 39 R14 and Lands in Chicago	750.00	5– 1–35	

I. & M. CANAL
SCHEDULE OF LAND LEASES AND RENTALS ON AN ANNUAL BASIS
PAID UP LEASES—Continued

Date of Execution	Date of Expiration	Name of Lessee	Description of Land	Annual Rental Rate	Date Paid to	Remarks
9-25-18	9-25-35	Grine, P. & T. & H.	75'x100' Sec. 29 Twp. 34 R 8	$10.00	9-25-34	
4- 1-20	4- 1-36	Hamre, A. & Wife	75'x100' Sec. 3 Twp. 33 R 7	10.00	4- 1-35	
5- 4-08	5- 4-35	Holderman, S. D.	Fencing Privilege Sec. 9 Twp. 33 R 6	5.00	5- 4-35	
7-15-32	7-15-35	Hurt, L. C. & Wife	75'x150' Sec. 13 Twp. 38 R12	22.00	7-15-34	
4- 1-32	4- 1-37	Ill. Power & Light Corp.	126'x685' Sec. 15 Twp. 33 R 1	150.00	4- 1-35	
5- 1-32	4-30-52	Ill. Power & Light Corp.	No Description, Sec. 11 Twp. 33 R 3	62.50	3-31-35	
5- 1-25	5- 1-35	Jovanoich, T. & Wife	75'x200' Sec. 12 Twp. 38 R12	25.00	5- 1-35	
1-26-33	1-26-36	Jurkovici, T. I. & Wife	75'x100' Sec. 12 Twp. 38 R12	15.00	1-26-35	
5- 1-29	5- 1-35	Kelley, J. M. & Wife	75'x123' Sec. 3 Twp. 33 R 7	15.00	5- 1-35	
2-20-33	2-30-36	Kindlespire C. & Wife	79'x100' Sec. 10 Twp. 33 R 7	15.00	2-20-35	
8- 1-17	8- 1-35	Kleboski, F. A.	90'x200' Sec. 35 Twp. 39 R13	20.00	8- 1-34	
3- 1-31	3- 1-36	Koleff, J. & Wife	76'x100' Sec. 13 Twp. 38 R12	15.00	3- 1-35	
9-25-18	9-25-35	Larson, Ole	75'x300' Sec. 3 Twp. 33 R 7	15.00	9-25-34	
4-19-30	4-19-36	Matthiesen & Hegeler Zinc Co.	Sec. 15 Twp. No Description, Sec. 22 Twp. 33 R 1	50.00	4-19-35	
5-18-22	5-18-35	McCowan, Roy	75'x1866' Sec. 17 Twp. 34 R 9	15.00	5-18-35	
12-12-27	1-12-36	Meador, J. & Wife	46.6'x90' Sec. 9 Twp. 33 R 2	15.00	1-12-35	
7-14-30	7-14-35	Morris Lumber Co.	59'x284' Sec. 9 Twp. 33 R 7	50.00	7-14-34	
7- 8-20	7- 8-35	Ottawa, Town of	34'x 60' Sec. 11 Twp. 33 R 3	5.00	11- 1-34	
10-15-27	10-15-35	Palmer, Dana M.	80'x150' Sec. 11 Twp. 33 R 3	30.00	10-15-34	
5-11-28	5-11-35	Parker, John	75'x100' Sec. 35 Twp. 39 R13	15.00	5-11-35	
1-20-20	1-20-36	Polarek, Martin	75'x500' Sec. 14 Twp. 37 R11	50.00	1-20-35	
10-15-22	10-15-35	Rimmele, R. J.	2,050 sq. ft. Sec. 15 Twp. 33 R 1	10.00	10-15-34	
7- 1-28	7- 1-35	Rimmele, R. W. & Wife	2,130 sq. ft. Sec. 15 Twp. 33 R 1	15.00	7- 1-34	
7-16-32	7-16-35	Romac, Sam & Wife	75'x100' Sec. 13 Twp. 38 R12	15.00	7-16-34	
1-12-20	1-12-36	Russell, R. H. & Wife	90'x 97' Sec. 9 Twp. 33 R 2	10.00	1- 2-35	
2-15-31	2-15-36	Sharp, Wm. & Wife	No Description, Sec. 3 Twp. 33 R 7	15.00	2-15-35	
6- 2-23	6- 2-43	Schermerhorn & Warren	No Description, Sec. 15 Twp. 33 R 1	100.00	6- 2-35	
7-15-32	7-15-35	Simons, Mrs. Wm.	75'x100' Sec. 13 Twp. 38 R12	15.00	7-15-34	
9-25-18	9-25-35	Still, Chas.	75.05'x100' Sec. 9 Twp. 38 R 2	10.00	1-12-35	
9-15-32	9-15-35	Stagner, A. & Wife	60'x200' Sec. 3 Twp. 33 R 7	33.00	9-25-35	
9-15-32	9-15-35	Stagner, A. & Wife	75'x100' Sec. 12 Twp. 38 R12	15.00	9-15-34	

I. & M. CANAL

SCHEDULE OF LAND LEASES AND RENTALS ON AN ANNUAL BASIS

PAID UP LEASES—Concluded

Date of Execution	Date of Expiration	Name of Lessee	Description of Land	Annual Rental Rate	Date Paid to	Remarks
7- 1-15	7- 1-35	Strong, Mrs. Mary	One Lot Sec. 9 Twp. 33 R 7	$5.00	7- 1-34	
7- 1-26	7- 1-35	Tadjak, E. & Husband	Strip of Land Sec. 15 Twp. 33 R 1	15.00	7- 1-34	
11-19-33	11-19-38	Texas, The Co.	Strip of Land, Sec. 14 Twp. 36 R10	350.00	11-19-34	
1-10-20	1-10-36	Tomich, M. & Wife	15,000 Sq. Ft. Sec. 12 Twp. 38 R12	20.00	1-10-35	
8- 1-23	8- 1-35	Tomlenoved, T & Wife	50′x100′ Sec. 12 Twp. 38 R12	10.00	8- 1-34	
7- 1-12	7- 1-35	Utica Elevator Co.	76′x1,115′ Sec. 9 Twp. 33 R 2	150.00	7- 1-34	
6-15-31	6-15-35	Vasques, Louis	75′x100′ Sec. 13 Twp. 38 R12	15.00	6-15-35	
1-12-20	1-12-36	Watts, Chas.	76.05′x89′ Sec. 9 Twp. 33 R 2	10.00	1-12-35	
5-22-19	5-22-35	Western Quarries Co.	75′x100′ Sec. 22 Twp. 37 R11	60.00	5-22-35	
7-15-32	7-15-35	Wojcieschowski, S. & Wife	75′x100′ Sec. 4 Twp. 38 R13	15.00	7-15-34	
7-17-31	7-17-35	Wolfe, R. & Wife	70′x 72′ Sec. 29 Twp. 34 R 8	15.00	7-17-34	
7-10-19	7-10-35	Woock, Clarence	70′x 72′ Sec. 23 Twp. 36 R10	15.00	7-10-34	
1-12-20	1-12-35	Arthur, Wm. & Wife	82′x 90′ Sec. 9 Twp. 33 R 2	10.00	1-12-35	
1-12-20	1-12-35	Bratney, A. D. & Wife	65′x90′ Sec. 9 Twp. 33 R 2	10.00	1-12-34	
5- 1-26	5- 1-35	Cavanaugh, E. & Wife	50′x100′ Sec. 11 Twp. 33 R 3	15.00	5- 1-34	
1-12-25	1-12-35	Conover, Mary J.	43.6x90′ Sec. 9 Twp. 33 R 2	10.00	1- 1-35	
5-20-19	5-20-35	DePaeole, Mrs. A.	75′x475′ Sec. 7 Twp. 38 R13	7.00	5-20-34	
1- 2-20	1- 2-35	Garbutt, Wm. & Wife	75′x100′ Sec. 3 Twp. 33 R 7	10.00	1- 2-35	
9-10-26	9-10-35	Hankins, Wm. & Wife	75′x100′ Sec. 13 Twp. 38 R12	15.00	9-10-34	
1-17-26	1-17-36	Olson, Miss Julia	75′x100′ Sec. 32 Twp. 38 R12	15.00	1-17-35	
3-15-33	3-15-36	Peterson, M. O. & Wife	75′x100′ Sec. 3 Twp. 33 R 7	15.00	3-15-35	
1-20-20	1-20-36	Piosecke, Kazmer	48′x75′ Sec. 20 Twp. 37 R11	9.00	1-20-35	
1-12-34	1-12-36	Prentice, H. & Wife	90′x132′ Sec. 9 Twp. 33 R 2	20.00	1-12-35	
1-17-20	1-17-36	Ring, Mrs. Anna	18,750 sq. ft. Sec. 32 Twp. 38 R12	25.00	1-17-35	
7- 1-22	7- 1-35	Schurr, E. S.	33½′x294′ Sec. 15 Twp. 33 R 1	10.00	7- 1-34	
5-18-22	5-18-35	Spicer, W. H.	Fencing Priv. Sec. 21 Twp. 33 R 5	15.00	5-18-34	
7- 1-22	7- 1-35	Timm, John	55′x77′ Sec. 15 Twp. 33 R 1	10.00	7- 1-34	
7-15-32	7-15-35	Tomich, P. & Wife	75′x100′ Sec. 12 Twp. 38 R12	15.00	7-15-34	
5- 1-32	4-30-52	Ottawa, City of	Ottawa, Ill. Sec. 11 Twp. 33 R 3	750.00	5- 1-34	
		Total		$3,898.50		

I. & M. CANAL

SCHEDULE OF LAND LEASES AND RENTALS ON AN ANNUAL BASIS. DELINQUENT BUT CONSIDERED COLLECTIBLE

Date of Execution	Date of Expiration	Name of Lessee	Description of Land	Annual Rental Rate	Amount in Arrears	Date Paid To	Remarks:
8- 2-26	8- 2-46	Ill. Waterway Barge & Dock Co.	No Descrip. Sec. 30 Twp. 39 R13	$2,000.00	$2,000.00	8- 2-33	
6-12-24	6-12-35	Laidley, T. & Wife	70′x984′ Sec. 8 Twp. 34 R 9	15.00	30.00	6-12-32	
6-24-19	11-24-32	Manley, Thos.	90′x144′ Sec. 9 Twp. 33 R 2	75.00	150.00	11-24-32	
1-12-27	1-12-35	Manley, W. L.	55′x 90′ Sec. 9 Twp. 33 R 2	15.00	45.00	1-12-31	
1-29-20	1-29-34	Miller, Aug.	75′x 88′ Sec. 20 Twp. 37 R11	10.00	10.00	1-29-34	
4-10-28	4-10-35	Mitchell, Wm. & Wife	75′x200′ Sec. 3 Twp. 33 R 7	20.00	10.00	4-10-34	
10-15-27	10-15-35	Momper, Peter	50′x 75′ Sec. 29 Twp. 34 R 8	15.00	15.00	10-15-33	
1-12-31	1-12-36	Ristau, C. & Wife	75′x 90′ Sec. 9 Twp. 33 R 2	15.00	12.50	1-12-34	
5-14-25	5-14-35	Rosenbach J. & Wife	75′x200′ Sec. 12 Twp. 38 R12	15.00	15.00	5-14-34	
2- 7-33	2- 7-36	Scherer, Fred T.	78′x100′ Sec. 11 Twp. 33 R 3	37.50	37.50	2- 7-34	
2-15-23	2-15-36	Stedman, Geo.	Strip of Land, Sec. 33 Twp. 35 R 9	25.00	25.00	2-15-33	
1-12-20	1-12-36	Veal, Wm. & Wife	50′x 76.05′ Sec 9 Twp. 33 R 2	10.00	10.00	1- 1-34	
		Total		$2,252.50	$2,360.00		

I. & M. CANAL

SCHEDULE OF LAND LEASES AND RENTALS ON AN ANNUAL BASIS. DELINQUENT AND UNCOLLECTIBLE

Date of Execution	Date of Expiration	Name of Lessee	Description of Land	Annual Rental Rate	Amount in Arrears	Date Paid To	Remarks:
5- 1-29	5- 1-35	Bennett, Mrs. L.	65′x76′ Sec. 11 Twp. 33 R 3	$15.00	$30.00	5- 1-32	On Relief.
10-15-28	10-15-35	Byers, Mrs. Anna	50′x100′ Sec. 11 Twp. 33 R 3	15.00	60.00	15-10-30	On Relief.
7-10-23	7-10-35	Cesak, Ray & Wife	75′x100′ Sec. 35 Twp. 39 R13	10.00	10.00	7-10-33	
8-15-22	8-15-35	Coleman, Hardware Co.	Strip Land. Sec. 9 Twp. 33 R 7	25.00	50.00	8-15-32	
1-12-26	1-12-36	Ford, Wm.	90′x 96′ Sec. 9 Twp. 33 R 2	10.00	10.00	1-12-33	
8- 1-22	8- 1-35	Goods, T. & Wife	75′x100′ Sec. 29 Twp. 34 R 8	10.00	10.00	8- 1-33	
5-16-21	5-16-34	James, Henry	75′x100′ Sec. 20 Twp. 34 R 9	10.00	20.00	5-16-32	Moved Away.
5-23-23	5-23-35	Irrgang, Mrs. B.	42′x 65′ Sec. 11 Twp. 33 R 3	10.00	20.00	5-23-32	
11-15-20	11-15-35	Johnson, Andrew	75′x100′ Sec. 35 Twp. 39 R13	10.00	30.00	11-15-31	On Relief.
9- 2-24	9- 2-34	Knowlton, Mrs. Edna.	75′x271′ Sec. 8-17 Twp. 34 R 9	10.00	10.00	9- 2-33	Moved away.
10- 1-28	10- 1-35	Miller, Mrs. N. B.	Strip land, Sec. 11 Twp. 33 R 3	10.00	30.00	10- 1-31	On Relief.
7-23-21	7-23-35	Olish, John & Wife	75′x100′ Sec. 35 Twp. 39 R13	10.00	20.00	7-23-32	On Relief.
4- 5-21	4- 5-36	Olish, Joseph	75′x100′ Sec. 35 Twp. 39 R13	10.00	20.00	4- 5-32	On Relief.
4-23-22	4-23-36	Przybyl, Mrs. Anna	75′x100′ Sec. 13 Twp. 38 R12	15.00	15.00	4-23-33	On Relief.
3- 8-19	3- 8-36	Radomski, Walter	7,500 sq. ft. Sec. 25 Twp. 37 R10	8.00	24.00	3- 8-32	On Relief.
1-18-33	1-18-36	Rick, Henry	80′x100′ Sec. 29 Twp. 34 R 8	15.00	15.00	1-18-34	Unemployed.
7- 1-28	7- 1-35	Sarwinski, Frank	1,375 sq. ft. Sec. 15 Twp. 33 R 1	15.00	15.00	7- 1-33	Unemployed.
10- 1-27	10- 1-35	Schwager, John	75′x100′ Sec. 35 Twp. 39 R13	15.00	45.00	10- 1-31	On Relief.
6-20-18	6-20-35	Schwager, D. & Wife	75′x200′ Sec. 35 Twp. 39 R13	20.00	60.00	6-20-31	On Relief.
3- 1-22	3- 1-36	Smith, J. & Wife	75′x300′ Sec. 3 Twp. 38 R13	30.00	30.00	3- 1-33	On Relief.
9-15-32	9-15-35	Strader, R. & Wife	75′x100′ Sec. 13 Twp. 38 R12	15.00	15.00	9-15-33	Unemployed.
1-18-33	1-18-36	Walker, John H.	75′x200′ Sec. 29 Twp. 34 R 8	30.00	45.00	1-18-34	Unemployed.
10- 1-22	10- 1-35	Warnock, Wm. & Wife	75′x250′ Sec. 35 Twp. 39 R13	30.00	60.00	10- 1-32	On Relief.
7-15-25	7-15-35	Wiegand, J. & Wife	60′x 75′ Sec. 20 Twp. 37 R11	15.00	30.00	7-15-32	On Relief.
3- 8-19	3- 8-36	Wietschkoski, M.	150′x400′ Sec. 25 Twp. 37 R11	10.00	30.00	3- 8-31	On Relief.
1-29-20	1-29-36	Wiegand, Rose	90′x138′ Sec. 20 Twp. 37 R11	10.00	20.00	1-29-33	On Relief.
5- 3-19	5- 3-35	Zygman, John P.	Strip of Land, Sec. 20 Twp. 37 R11	10.00	30.00	5- 3-31	On Relief.
		Total		$393.00	$754.00		

I. & M. CANAL

SCHEDULE OF LAND LEASES AND RENTALS ON AN ANNUAL BASIS. WHICH HAVE BEEN DISCONTINUED FOR VARIOUS REASONS

Date of Execution	Date of Expiration	Name of Lessee	Description of Land	Annual Rental Rate	Amount in Arrears	Date Paid To	Remarks:
2- 1-27	2- 1-33	Consumer, The Co.	75′x250′ Sec. 21 Twp. 37 R11	$100.00		2- 1-33	
4- 9-32	4- 9-33	Fischer, Anton & Wife	25′x 69′ Sec. 3 Twp. 38 R13	15.00		4- 9-33	
1- 2-20	1- 2-35	Higgins, James	75′x 90′ Sec. 3 Twp. 33 R 7	10.00		1- 2-35	
1-18-33	1-18-35	Jeffrey, James J.	80′x100′ Sec. 29 Twp. 34 R 8	15.00		1-18-34	
1-20-20	1-20-35	Kler, S. & Wife	75′x300′ Sec. 5 Twp. 37 R12	30.00		1-20-34	
2-10-26	2-10-35	Prokes, C. & Wife	75′x200′ Sec. 35 Twp. 39 R13	30.00		2-10-35	
11-17-30	11-17-33	Wannemacher, Fred	50′x 75′ Sec. 26 Twp. 34 R 8	10.00		11-17-33	Building removed.
		Total		$210.00			

ON MONTHLY BASIS.

6- 1-33	4- 1-35	Knowles Foundry & Machine Co.	Sec. 11 Twp. 33 R 3 One-half Block 68, Ottawa.	$5.00	$30.00	12-31-33	

I. & M. CANAL

SCHEDULE OF LAND AND HOUSE LEASES AND RENTALS ON AN ANNUAL BASIS.

PAID UP LEASES.

Date of Execution	Date of Expiration	Name of Lessee	Description of Property	Annual Rental Rate	Date Paid To	Amount in Arrears	Remarks:
7-27-22	7-27-35	A.T. & S.F. Ry. Co.	Sec. 36 Twp. 39 (Cook House & R13 Land)	$100.00	7-27-35		
6- 1-33	2-28-35	Dickinson, Thomas	Sec. 23 Twp. 36 R10	96.00	7- 1-34		
		Total		$196.00			

DISCONTINUED LEASES.

Date of Execution	Date of Expiration	Name of Lessee	Description of Property	Annual Rental Rate	Date Paid To	Amount in Arrears	Remarks:
11-30-31	11-30-34	Groth, Joseph M.	Sec. 29 Twp. 39 R14	$15.00		$45.00	Moved out.
5-15-22	5-15-35	McCarthy, John V.	Sec. 16 Twp. 35 R10	5.00		10.00	Discontinue.
		Total		$20.00		$55.00	

I. & M. CANAL
SCHEDULE OF POLE LINE LEASES ON AN ANNUAL BASIS.
PAID UP LEASES.

Date of Execution	Date of Expiration	Name of Lessee	Location	Annual Rental Rate	Date Paid To	Amount in Arrears	Remarks:
10-10-25	10-10-36	American T. & T. Co.	Sec. 31 Twp 34 R4	$10.00	10-10-34		
7- 1-33	6-30-38	Ill. Bell Telephone Co.	Ashland Ave. Chicago to the West line of Grundy Co.	24.94	4-30-35		33 cents per pole per yr.
7- 1-33	6-30-35	Ill. Bell Telephone Co.	Between the City of LaSalle and east line of LaSalle County	15.02	4-30-35		33 cents per pole per yr.
9-14-32	9-15-32	Ill. Power & Light Corp.	Sec. 11 Twp. 33 R3	10.00	9-14-34		33 cents per pole per yr.
7- 9-27	7- 9-47	Ill. Power & Light Corp.	Peru to Joliet	176.77	7- 9-34		33⅓ cents per pole per yr.
7-17-16	7-17-36	Public Service Co.	Jackson St. Joliet to Ashland Ave. Chicago.	417.33	7-17-34		33⅓ cents per pole per yr.
10-10-25	10-10-35	Western Union Co.	Sec. 35 Twp. 39 R13	5.00	10-10-34		
5- 1-27	5- 1-35	Marseilles Tel. Co.	Sec. 13 Twp. 33 R4	48.51	5- 1-34		
		Total		$707.57			

I. & M. CANAL
SCHEDULE OF RAILROAD RIGHT OF WAY LEASES ON AN ANNUAL BASIS.
DELINQUENT AND CONSIDERED UNCOLLECTIBLE.

Date of Execution	Date of Expiration	Name of Lessee	Location	Annual Rental Rate	Date Paid To	Amount in Arrears	Remarks:
9- 1-28	9- 1-48	Illinois Traction, Inc.	Sec. 10 Twp. 33 R3 Sec. 11 Twp. 33 R3 Sec. 12 Twp. 33 R3	$600.00	9- 1-34	----------	Out of Business.

I. & M. CANAL
SCHEDULE OF SWITCH TRACK LEASES ON AN ANNUAL BASIS.
PAID UP LEASES.

Date of Execution	Date of Expiration	Name of Lessee	Description of Land	Annual Rental Rate	Date Paid To	Amount in Arrears	Remarks:
1- 1-18	1- 1-36	C.B. & Q. Ry. Company	Sec. 11 Twp. 11 R3	$750.00	1- 1-35	----------	----------
12- 5-29	12- 5-35	C.B. & Q. Ry. Company	Sec. 10 Twp. 33 R3 Sec. 11 Twp. 33 R3	400.00	12- 5-34	----------	----------
12- 5-29	12- 5-35	C.R.& I. & P. Ry. Company	Sec. 10 Twp. 33 R3 Sec. 11 Twp. 33 R3	400.00	12- 5-34	----------	----------
		Total		$1,550.00			

I. & M. CANAL

SCHEDULE OF WATER PIPE LEASES AND PRIVILEGES ON AN ANNUAL BASIS.

PAID UP LEASES.

Date of Execution	Date of Expiration	Name of Lessee	Location	Annual Rental Rate	Date Paid To	Amount in Arrears	Remarks:
7-25-22	7-25-35	Globe Oil & Refining Co.	Sec. 25— Sec. 26— Twp. 37 R10 Sec. 35—	$150.00	7-25-34		
10- 1-03	10- 1-35	Chicago Retort & Fire Brick Co.	45th St. Between Clark & LaSalle Sts., Chicago	80.00	10-11-34		
5-14-23	5-14-43	Commonwealth Edison Co.	Sec. 35 Twp. 39 R13	25.00	5-14-35		Pipes under canal.
8- 1-17	8- 1-35	King & Hamilton Co.	Ottawa, Ill.	40.00	8- 1-34		
1- 1-18	1- 1-36	Morris Paper Mills	Sec. 3 Twp. 33 R 7	945.00	1- 1-35		
8- 1-17	8- 1-35	Ottawa Silica Co.	Sec. 10 Twp. 33 R 7	555.00	8- 1-34		
1- 1-11	1- 1-36	LaSalle, City of	LaSalle, Ill.	25.00	1- 1-35		Verbal lease.
8- 1-17	9- 1-35	Sanders Bros. Mfg. Co.	Ottawa, Ill.	50.00	8- 1-34		
6- 1-34	10- 1-34	Effner, J.	Sec. 33 Twp. 35 R 9	10.00	10- 1-34		
		Total		$1,880.00			

DELINQUENT BUT CONSIDERED COLLECTIBLE.

Date of Execution	Date of Expiration	Name of Lessee	Location	Annual Rental Rate	Date Paid To	Amount in Arrears	Remarks:
9-18-18	9-18-35	Adler, J. A. C.	Block 18, West Joliet	$25.00	9-18-32	$50.00	
12-16-18	12-16-35	American Steel & Wire Co.	Sec. 29 Twp. 34 R4	$2,250.00	12-16-32	4,500.00	
*5-24-22	5-24-35	*Briet, Fred B.	Sec. 29 Twp. 34 R4	1,500.00	5-24-25	15,000.00	
		Total		$3,775.00		$19,550.00	

* In court, written lease assigned to Dayton Hydro Electric Co.

I. & M. CANAL
SCHEDULE OF WATER PIPE LEASES AND PRIVILEGES ON AN ANNUAL BASIS.
DISCONTINUED LEASES.

Date of Execution	Date of Expiration	Name of Lessee	Location	Annual Rental Rate	Date Paid To	Amount in Arrears	Remarks:
12- 1-21	12- 1-34	McCarthy, John V.	Sec. 16 Twp. 35 R10	$12.00	12- 1-31	$36.00	Not Operating.

I. & M. CANAL
SCHEDULE OF WELL LEASES AND PRIVILEGES ON AN ANNUAL BASIS.
DELINQUENT BUT CONSIDERED COLLECTIBLE.

Date of Execution	Date of Expiration	Name of Lessee	Location	Annual Rental Rate	Amount in Arrears	Date Paid To	Remarks:
3-18-24	3-18-36	Joliet, City of	Sec. 16 Twp. 35 R10	$10.00	$10.00	3-18-34	

PAID UP LEASES.

1- 1-11	1- 1-36	LaSalle. City of	Sec. 14 Twp. 35 R1	$25.00		1- 1-35	

FINANCIAL REPORT.

By A. H. Harrison, *Accountant.*

The following tabulation shows the appropriations for the biennium July 1, 1933–5, for the various funds of the Division of Waterways; the amounts expended during the first half of said biennium, and the unexpended balance on June 30, 1934.

The source of revenues for the various appropriations is as follows:

Waterways-General;

Flood Relief, Illinois River;

Flood Relief, other than Illinois River, and

Maintenance of Navigation, Illinois River,
are all supported by General Revenue.

Flood Relief Illinois River, S. B. 777, was appropriated contingent on refunds from Federal Government of unexpended balances of various flood relief projects.

Waterway Construction Fund, part of $20,000,000.00 bond issue for deep waterway.

Water Terminal Fund revenue is derived from payments to be made by Chicago Produce Terminal Company for erection of a terminal building at Damen Avenue, Chicago.

I. & M. Canal Funds are derived from rentals of I. & M. Canal lands.

Statement of collections deposited to credit of various funds during the first year of the biennium is also shown.

STATUS OF FINANCES.

MAINTENANCE OF NAVIGATION FUND—JUNE 30, 1934.

Appropriation July 1, 1933 to June 30, 1935		$ 150,000.00
EXPENDED TO JUNE 30, 1934—		
Salaries and wages	$37,186.27	
Operation and maintenance	13,854.08	
Repairs	1,987.04	
Equipment	499.25	
		53,526.64
Unexpended balance June 30, 1934		$ 96,473.36

FINANCIAL REPORT—DIVISION OF WATERWAYS.

Appropriation	Appropriation July 1, 1933 June 30, 1935	Expended July 1, 1933 June 30,1934	Unexpended Balance June 30, 1934
Waterways—General—			
Office expense	$ 10,000.00	$ 5,113.97	$ 4,886.03
Travel expense	2,000.00	789.86	1,210.14
Repairs and equipment	500.00	233.24	266.76
Prevention of obstructions	20,000.00	8,400.55	11,599.45
Engineering service	35,000.00	11,945.44	23,054.56
Surveys and investigation	30,000.00	3,469.16	26,530.84
Flood Relief—			
Illinois River Valley—Reapp.	35,949.91	20,710.75	15,239.16
Other than Illinois River Valley—Reapp.	106,427.29	71,143.27	35,284.02
Illinois Rivers—S. B. 777	110,000.00		110,000.00
Waterway Construction	1,300,000.00	520,141.68	779,858.32
I. & M. Canal	60,000.00	24,133.08	35,866.92
Maintenance of Navigation Illinois Rivers	150,000.00	53,526.64	96,473.36
Water Terminal Fund	200,000.00		200,000.00
Total	$ 2,059,877.20	$ 719,607.64	$ 1,340,269.56

Collections	July 1, 1933 June 30, 1934	Total
I. and M. Canal Fund	$16,010.85	
Flood Relief Refunds	33,788.52	
Waterway Maintenance Fund	92.71	
Waterway Construction Fund	15,413.04	
General Revenue	1.44	$65,306.56

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STATE OF ILLINOIS

HENRY HORNER, *Governor*

AUG. 26TH 1818

EIGHTEENTH ANNUAL REPORT OF DIVISION OF WATERWAYS

July 1, 1934 to June 30, 1935

★

Issued By

DIVISION OF WATERWAYS
DEPARTMENT OF PUBLIC
WORKS AND BUILDINGS

[Printed by authority of the State of Illinois.]

STATE OF ILLINOIS

HENRY HORNER, *Governor*

EIGHTEENTH ANNUAL REPORT OF DIVISION OF WATERWAYS

July 1, 1934 to June 30, 1935

★

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ADMINISTRATIVE OFFICERS OF THE DEPARTMENT OF PUBLIC WORKS AND BUILDINGS, DIVISION OF WATERWAYS, FOR THE FISCAL YEAR JULY 1, 1934 TO JUNE 30, 1935.

Henry Horner, Governor.
Robert Kingery, Director.

DIVISION OF WATERWAYS.

Walter M. Smith, D. Sc., Chief Engineer
M. V. Ahlvin, Assistant Chief Engineer

BUREAU CHIEFS.

W. G. Potter, Chief of Bureau of Rivers and Lakes Control.
Gunni Jeppesen, Bridge Engineer.
T. B. Casey, Terminal Engineer.
John Nichols, Auditor I. and M. Canal.
G. W. Flattery, Accountant

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WATERWAYS.

WALTER M. SMITH, D. Sc., *Chief Engineer.*

JURISDICTION OF THE DIVISION OF WATERWAYS.

The Division of Waterways being successor to the Rivers and Lakes Commission all powers, duties and jurisdiction of the said commission became vested by law in the Division of Waterways, especially as to the jurisdiction over all rivers and lakes in the State of Illinois, to prevent encroachments thereon; the powers and duties of the former Illinois Waterway Commission with reference to the construction, operation and maintenance of the Illinois Waterway and the development and utilization of the power thereof; and also the powers and duties of the former Illinois and Michigan Canal Commissioners for the control and management of the Illinois and Michigan Canal, the maintenance of the navigability thereof and lease of the canal lands are vested by law in the Division of Waterways.

The Division of Waterways is the custodian of the Illinois Waterway and the Illinois and Michigan Canal and has charge of operation, and maintenance of operating machinery on all the movable bridges on these waterways.

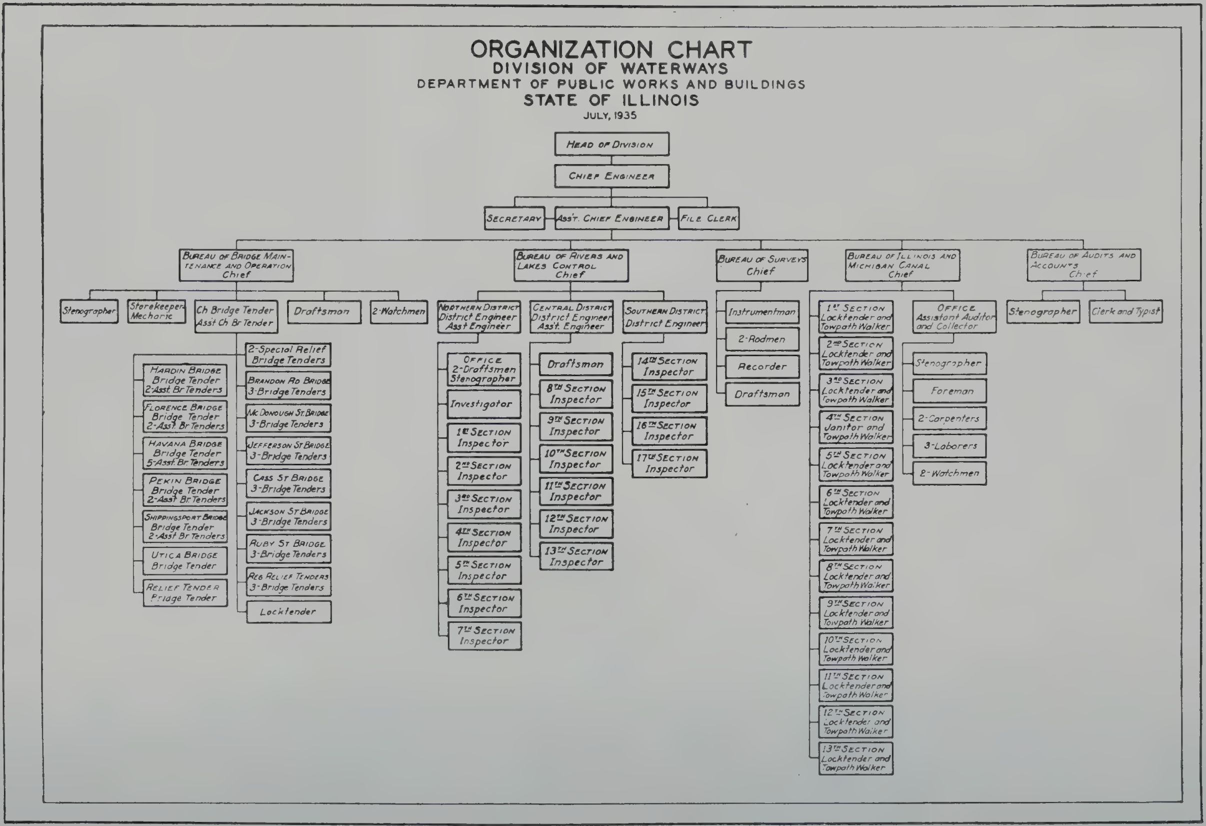
On September 1, 1934 the Division of Waterways also took over the operation and maintenance of operating machinery and navigation lights of all the movable bridges on the Illinois River constructed by the Division of Highways.

Application must be made to the Division of Waterways for a permit for the construction of any structure on any river, lake or waterway in the State of Illinois wherein the State or the people of the State have any rights or interests, and such applications must be approved by the Division of Waterways and signed by the Director of Public Works and Buildings before construction shall be started.

REORGANIZATION OF THE DIVISION.

During the year the Division of Waterways was reorganized, such reorganization being necessitated by the completion of the bridge building program which finally completed the Illinois Waterway.

The revised organization chart is shown on the following page:



ORGANIZATION CHART
DIVISION OF WATERWAYS
DEPARTMENT OF PUBLIC WORKS AND BUILDINGS
STATE OF ILLINOIS
JULY, 1935

HEAD OF DIVISION
CHIEF ENGINEER
SECRETARY
ASS'T. CHIEF ENGINEER
FILE CLERK
BUREAU OF BRIDGE MAINTENANCE AND OPERATION Chief
Stenographer
Storekeeper Mechanic
Ch Bridge Tender Asst Ch Br Tender
Draftsman
2-Watchmen
HARDIN BRIDGE Bridge Tender 2-Asst. Br Tenders
FLORENCE BRIDGE Bridge Tender 2-Asst. Br Tenders
HAVANA BRIDGE Bridge Tender 5-Asst. Br. Tenders
PEKIN BRIDGE Bridge Tender 2-Asst Br. Tenders
SHIPPINGSPORT BRIDGE Bridge Tender 2-Asst Br Tenders
UTICA BRIDGE Bridge Tender
RELIEF TENDER Bridge Tender
2-Special Relief Bridge Tenders
BRANDON RD BRIDGE 3-Bridge Tenders
MC DONOUGH ST. BRIDGE 3-Bridge Tenders
JEFFERSON ST BRIDGE 3-Bridge Tenders
CASS ST BRIDGE 3-Bridge Tenders
JACKSON ST BRIDGE 3-Bridge Tenders
RUBY ST BRIDGE 3-Bridge Tenders
REG RELIEF TENDERS 3-Bridge Tenders
Locktender
BUREAU OF RIVERS AND LAKES CONTROL Chief
NORTHERN DISTRICT District Engineer Asst Engineer
OFFICE 2-Draftsmen Stenographer
Investigator
1st SECTION Inspector
2nd SECTION Inspector
3rd SECTION Inspector
4th SECTION Inspector
5th SECTION Inspector
6th SECTION Inspector
7th SECTION Inspector
CENTRAL DISTRICT District Engineer Ass't. Engineer
Draftsman
8th SECTION Inspector
9th SECTION Inspector
10th SECTION Inspector
11th SECTION Inspector
12th SECTION Inspector
13th SECTION Inspector
SOUTHERN DISTRICT District Engineer
14th SECTION Inspector
15th SECTION Inspector
16th SECTION Inspector
17th SECTION Inspector
BUREAU OF SURVEYS Chief
Instrumentman
2-Rodmen
Recorder
Draftsman
BUREAU OF ILLINOIS AND MICHIGAN CANAL Chief
1st SECTION Locktender and Towpath Walker
2nd SECTION Locktender and Towpath Walker
3rd SECTION Locktender and Towpath Walker
4th SECTION Janitor and Towpath Walker
5th SECTION Locktender and Towpath Walker
6th SECTION Locktender and Towpath Walker
7th SECTION Locktender and Towpath Walker
8th SECTION Locktender and Towpath Walker
9th SECTION Locktender and Towpath Walker
10th SECTION Locktender and Towpath Walker
11th SECTION Locktender and Towpath Walker
12th SECTION Locktender and Towpath Walker
13th SECTION Locktender and Towpath Walker
OFFICE Assistant Auditor and Collector
Stenographer
Foreman
2-Carpenters
3-Laborers
2-Watchmen
BUREAU OF AUDITS AND ACCOUNTS Chief
Stenographer
Clerk and Typist

APPROPRIATIONS FOR FOLLOWING BIENNIUM JULY 1, 1935 TO JUNE 30, 1937.

The following appropriations were made by the Fifty-ninth General Assembly during this year to carry on the work of the Division of Waterways for the biennium beginning July 1, 1935:

For office expenses	$ 10,000.00
For travel expenses	10,000.00
For repairs and equipment	500.00
For services and expenses in investigation and preventing obstructions in or dumping garbage, waste and refuse matter in, upon or along the shores of rivers, streams, or other bodies of water in this State in such manner as to make it possible for the same to be washed into such stream or other body of water in time of flood or high water levels	32,000.00
For engineering services and expenses	35,000.00
For services and expenses in the survey of State land and meandered waters, and in the investigations of complaints of encroachments and pollutions, and in investigations for the reclamation and protection of the lands and property of the State of Illinois	30,000.00
For salaries and wages, office expenses, travel, operation, repairs, equipment and permanent improvements necessary for the operation and maintenance of the Illinois and Michigan Canal payable only out of such funds or monies as shall be covered into the State Treasury and placed by the State Treasurer to the credit of the special fund known as the Illinois and Michigan Canal Fund	50,000.00
For the construction of the Illinois Waterway and its appurtenances, whether by contract or by direct employment of services, labor, materials and equipment, and for the payment for property taken or damaged in the construction, operation, or maintenance of the Illinois Waterway and its appurtenances; the repair, replacement or reconstruction of existing drainage or sewer system which will be destroyed or materially interfered with in the construction of the Illinois Waterway and the appurtenances in accordance with the provision of "An Act in relation to the construction, operation and maintenance of a deep waterway from the water power plant of the Sanitary District of Chicago at or near Lockport, to a point in the Illinois River at or near Utica, and for the development and utilization of the water power thereof," approved June 17, 1919, payable from the Waterway Fund	75,000.00
For all work necessary for the maintenance of navigation and structures on all Illinois rivers under the Department of Public Works and Buildings	275,000.00
For flood relief and rivers and lakes control to be expended either in cooperation with the United States Government or agencies thereof and political subdivisions of the State or otherwise; total for flood relief	500,000.00
Total appropriations	$1,017,500.00
For flood relief work reappropriated under Senate Bill No. 566	$46,256.83

ILLINOIS WATERWAY BRIDGES.

The bridge construction program for bridges over the Illinois Waterway was completed except for final acceptance and payments on Contracts B-17A for substructure and B-17D, superstructure of Ruby Street bridge; and B-19, Ruby Street bridge operator's house. This left a balance of forty-one thousand nine hundred and two and 50/100 dollars ($41,902.50) in the Waterway Construction Fund to cover these final payments.

At the end of the year the Division of Waterways was operating the following movable bridges:

Name	Location	Type
Ruby Street	Joliet	Trunnion Bascule
Jackson Street	Joliet	Rolling Lift Bascule
Cass Street	Joliet	Rolling Lift Bascule
Jefferson Street	Joliet	Rolling Lift Bascule
McDonough Street	Joliet	Rolling Lift Bascule
Brandon Road	Near Joliet	Trunnion Bascule
Utica	Near Utica	Rim Bearing Swing
Shippingsport	Near LaSalle	Vertical Lift
Pekin	Pekin	Vertical Lift
Havana	Havana	Rim Bearing Swing
Florence	Florence	Vertical Lift
Joe Page	Hardin	Vertical Lift

In addition, the Division of Waterways has charge of the following fixed bridges which were constructed by this division:

Name	Location	Type
Smith's	Channahon	Steel Through Truss
Marseilles Canal	Marseilles	Steel Through Truss
Marseilles River	Marseilles	Steel Through Truss
Hilliard	Ottawa	Cantilever

Details of these bridges with details of cost and other information will be found in reports of Mr. M. V. Ahlvin, Assistant Chief Engineer and Mr. Gunni Jeppesen, Bridge Maintenance Engineer.

DAMAGE CLAIMS.

At the beginning of the year claims for damages still unsettled, due to the construction of the Illinois Waterway, amounted to $427,922.09.

Claims amounting to $108,560.18 were settled by an award of $26,876.80 and claims amounting to $250,909.18 were settled by agreement for $56,626.80. The balance of the claims amounting to $68,452.73 upon which an agreement could not be reached were referred to the Court of Claims for settlement.

Details of the settlement of these claims will be found in the report of Mr. M. V. Ahlvin, Assistant Chief Engineer.

BUREAU OF RIVERS AND LAKES CONTROL.

The work of this bureau was carried on satisfactorily during the year with the organization perfected in the previous fiscal year.

A complete account of the work of this bureau will be found in the report of Mr. W. G. Potter, Chief of the Bureau.

BUREAU OF WATER TERMINAL CONSTRUCTION.

(Temporary.)

The barge canal terminal at Damen Avenue, Chicago, was finished during the year. The total amount of funds available for construction of this terminal furnished by the A. T. and S. F. and Illinois Central

R. R. Companies was $200,000.00. Of this amount $199,562.50 was spent in the construction of the terminal, leaving a balance of $437.65.

A detailed account of this work will be found in the report of Mr. Thos. B. Casey, Terminal Engineer.

BUREAU OF ILLINOIS AND MICHIGAN CANAL.

Collection of rentals for lands along the Illinois and Michigan Canal was less than during the previous year due to economic conditions and other causes.

Work was started on a complete survey of the Illinois and Michigan Canal lands and right-of-way with a view of setting permanent monuments to clearly establish the lines of the State owned property.

A detailed report of this bureau will be found in the report of Mr. John F. Nichols, Auditor and Collector.

BUREAU OF AUDITS AND ACCOUNTS.

The total appropriations for the Division of Waterways for the biennium July 1, 1933 to June 30, 1935 amounted to $2,059,877.20. Of this amount there was expended during the fiscal year July 1, 1933 to June 30, 1934 $719,607.64, leaving a balance on hand June 30, 1934 of $1,026,092.21. Of this amount there was expended during the year $711,914.86, leaving a balance on hand June 30, 1935 of $314,177.35.

The total collections during the year amounted to $251,677.34.

A complete financial statement will be found under the report of Mr. G. W. Flattery, Chief Accountant.

BUREAU OF SURVEYS.

Work was started by this bureau on a comprehensive survey of the Illinois and Michigan Canal lands with the intent to clearly map all of the land owned by the State and to establish and mark all important corners by suitable permanent monuments.

TRAFFIC ON THE ILLINOIS WATERWAY AND RIVER.

Traffic on the Illinois Waterway and River has been rapidly increasing since the unrestricted use of the Illinois Waterway was made possible.

In the table below is shown the traffic carried by the Inland Waterways Corporation on the Illinois River and the Illinois Waterway for the calendar years 1933 and 1934:

	Illinois River		Illinois Waterway		Interchanged	
	1934	1933	1934	1933	1934	1933
Upbound tons	144,663	62,384	104,750	15,140	103,692	14,792
Downbound tons	75,776	49,854	21,155	8,232	21,155	8,226
Total	220,439	112,238	125,905	23,372	124,847	23,018

ENGINEERING ACTIVITIES.

M. V. Ahlvin, *Assistant Chief Engineer.*

The end of the period represented by the Eighteenth Annual Report represented the close of waterway construction and the opening of the last bridge, the Ruby Street bridge on July 15th.

CONTRACT B-17A—RUBY STREET SUBSTRUCTURE.

Work on the east counterweight pit had just commenced at the beginning of June, 1934. Due to peculiar rock formations, a hole filled with gravel was encountered in the east one-half of the east pit which necessitated the rebuilding of the proposed cofferdam accompanied with the attendant delay in the construction. A supplemental contract was entered into with the contractor, The Powers-Thompson Company, for the extra work involved. The contract was completed except for final payment.

CONTRACT B-17D.

The completion of this contract was delayed somewhat due to the delay in the completion of the east pit foundation but this contract was completed by July 1, 1935, except for final payment. The bridge was opened to traffic July 15th.

CONTRACT B-19—RUBY STREET OPERATOR'S HOUSE.

This contract was assigned to E. H. Swenson by Schmidt Bros. Construction Company, with the approval of this division, and the house was completed by July 1, 1935 except for final payment.

The following is a statement showing expenditures by this division and costs of the various projects:

SUMMARY OF WATERWAY PROJECTS

Contracts on Waterway closed out after July 1, 1930	Contract	Paid by others	Other costs to the State	Total
Sale of Equipment and Land	$804,101.37		$ 64,882.77	$868,984.14
Hilliard Bridge	269,323.14	$100,400.00	77,120.76	446,843.90
Marseilles Bridges	147,267.75	42,349.47	35,139.58	224,756.80
Smith's Bridge	185,000.37		37,349.43	222,349.80
Brandon Road	83,970.41		18,040.10	102,010.51
McDonough Street	274,382.04		62,029.67	336,411.71
C. R. I. & P. Ry. Bridge	400,000.00		127.47	400,127.47
Jefferson Street Bridges	175,209.10	125,000.00	176,335.26	476,544.36
Temporary Van Buren Street Bridge	35,897.45		39,121.88	75,019.33
Cass Street Bridge	238,862.62	60,000.00	102,314.97	401,177.59
Jackson Street Bridge	164,289.73	22,424.10	23,975.30	210,689.13
Ruby Street Bridge	540,578.10	7,462.27	107,342.89	655,383.26
Totals	$3,318,882.08	$357,635.84	$743,780.08	$4,420,298.00

WORK OTHER THAN BRIDGES

Contracts on Waterway closed out after July 1, 1930	Contract	Paid by others	Other costs to the State
Paid after July 1, 1930:			
Contract 1			$ 701.26
Contract 2	$110,000.00		111.54
Contract 3	92,209.56		892.19
Contracts 5 and 6	68,790.93		256.90
Contract 7	58,781.70		292.61
Contract 8	244,686.55		3,894.64
Cont. 9 A-C-D	145,066.16		93.33
Cont. 10	84,566.47		1,039.99
Cont. 12			1,790.19
Sale and Maint. of Land			5,054.57
Maintenance of Dredging Fleet			5,648.78
Sale of Equipment			3,378.42
Rock Island Bridge	400,000.00		127.47
Audit of Waterway Fund			8,599.14
Miscellaneous Office Expenses and Supplies			33,129.21
Total	$1,204,101.37		$65,010.24

HILLIARD BRIDGE—OTTAWA, ILLINOIS

Costs after July 1, 1930:			
General Office Design			$33,277.14
Preliminary Field Work			1,122.47
Borings			1,071.58
Cont. B-10, Substructure	$131,262.34		
Paid by City of Ottawa		$50,400.00	
Cont. B-11, Superstructure	130,427.30		
Paid by Div. of Highways		50,000.00	
Field Engr. and Insp			22,039.61
Inspection Service			1,765.59
Division Office Overhead			1,975.42
Temporary Navigation Lights			80.75
Extra on Walks	33.50		
Cont. B-24, Rem. Old Br	7,600.00		
Misc. Office Supplies, etc			11,664.63
Sidewalk Slabs			2,997.25
Blue Printing Service			1,126.32
Total	$269,323.14	$100,400.00	$77,120.76

MARSEILLES BRIDGES—MARSEILLES, ILLINOIS

Costs after July 1, 1930:			
Prelim. Field Work			$ 1,079.92
Gen. Office Design			16,343.83
Cont. B-2 Canal Span	$53,668.20		
Cont. B-2 River Spans	38,007.02		
Cont. B-3 Canal Superstr	27,161.32		
Cont. B-20, River Superstr	27,529.91		
Paid by County of LaSalle		$32,349.47	
Paid by City of Marseilles		10,000.00	
Cont. B-21, Misc. Elect	901.30		
Field Engr. and Inspection			8,824.09
Inspection Service			1,273.91
Division Office Overhead			1,013.17
Injunction Costs (travel)			78.73
Temp. Navigation Lights			80.75
Misc. Office Supplies and Expense			5,867.51
Blue Print Service			577.67
Total	$147,267.75	$42,349.47	$35,139.58

SMITH'S BRIDGE

Contracts on Waterway closed out after July 1, 1930	Contract	Paid by others	Other costs to the State
Costs after July 1, 1930:			
Prelim. Surveys and Borings			$ 1,059.03
Gen. Office Design			16,882.59
Cont. B-7—Substructure	$ 56,707.20		
Cont. B-8—Superstructure	119,263.64		
Exploring S. Abutment	115.39		
Contract S. Abutment	3,508.50		
Cont. B-23—Remove old bridges	3,770.00		
Cont. B-21—Misc. Elect	1,635.64		
Field Engr. and Insp			10,685.74
Inspection Service			1,285.31
Division Office—Overhead			988.41
Temp. Nav. Lights			80.75
Misc. Office Supplies and Expenses			5,804.04
Blue Print Service			563.56
Total	$185,000.37		$37,349.43

BRANDON ROAD BRIDGE

Costs after July 1, 1930:			
Bids and Judging			$1,383.33
2d Design BE-2	$ 3,944.80		
General Office Design			5,567.06
Cont. B-5	78,895.95		
Changes in Abutment	1,129.66		
Field Engr. and Inspection			3,645.38
Inspection Service			372.03
Division Office, Overhead			427.58
Temp. Maint. Supplies			1,857.41
Temp. Power to Operate			911.68
Clock			8.67
Temp. Maint. Nav. O. H.			960.00
Blue Print Service			243.79
Misc. Office Expense and Supplies			2,663.17
Total	$83,970.41		$18,040.10

McDONOUGH STREET BRIDGE.

Costs after July 1, 1930:			
Bids and Judging			$ 1,383.83
Cont. BE-1—2d Design	$ 11,645.33		
General Office Design			18,345.40
Contract B-12—Substructure	77,608.32		
Cont. B-15—Superstructure	152,017.07		
Cont. B-16—Approaches	24,856.32		
Cont. B-19—Operators' Houses	8,125.00		
Cont. B-21—Mis. Elect	57.00		
Field Engr. and Inspection			9,654.25
Inspection Service			1,290.89
Division Office—Overhead			1,403.81
Property Damage			10,000.00
Settlement Costs			410.18
Temp. Maint. Supplies			1,857.38
Extra Transformer	73.00		
Clock			8.68
Temp. Nav. Lights			80.57
Temp. Maint. Nav. Overhead			960.00
Blue Print Service			800.41
Misc. Off. Expenses and Supplies			8,782.22
C. O. and P. Bus Service			7,052.37
Total	$274,382.04		$62,029.67

JEFFERSON STREET BRIDGE

Contracts on Waterway closed out after July 1, 1930	Contract	Paid by others	Other costs to the State
Costs after July 1, 1930:			
Bids and Judging			$ 1,383.34
Cont. BE-1—2d Design	$10,744.92		
General Office Design			17,694.02
Cont. B-6—Substructure	30,945.20		
Paid by Highways		$30,945.20	
Cont. B-4—Superstructure	85,800.60		
Paid by Highways		76,847.08	
Cont. B-13—Approaches	30,046.23		
Paid by Highways		17,207.72	
Cont. B-19—Operators' Houses	7,700.00		
Cont. B-21—Misc. Elect	1,571.60		
Cont. B-25—Vaulted Walks	8,400.25		
Field Engr. and Insp			4,832.89
Inspection Service			1,195.33
Division Office Overhead			1,546.55
Property Damages			119,850.00
Cost of Settlement			12,291.19
Temp. Maint. Supplies			1,857.39
Temp. Power for Operation			1,367.53
Temp. Maint. Nav. O. H			960.00
Temp. Lighting			26.50
Clock			8.68
Blue Print Service			881.80
Misc. Office Expense and Supplies			12,440.04
Total	$175,209.10	$125,000.00	$176,335.26

TEMPORARY BRIDGE

Costs after July 1, 1930:			
General Office Design			$ 3,817.17
Contract B-1	$32,315.97		
Contract B-12 partial	1,921.64		
Contract B-16 partial in tunnel	925.00		
Contract B-21 partial in tunnel	734.84		
Maint. Temp. Bridge			1,764.17
Field Engr. and Insp			526.32
Div. office Overhead			191.86
Chicago, Joliet Elect. Ry			30,693.83
Blue Print Service			109.39
Misc. Off. Expense and Sup			1,958.14
Total	$35,897.45		$39,121.88

CASS STREET BRIDGE—JOLIET, ILLINOIS

Costs after July 1, 1930:			
Bids and Judging			$ 1,383.33
Cont. BE-1, 2d Design	$ 10,843.03		
General Design			14,492.52
Cont. B-6, Subst	42,193.05		
Paid by Highways		$16,408.41	
Cont. B-9, Super st	120,804.23		
Paid by Highways		43,591.59	
Cont. B-14, Approaches	52,724.21		
Cont. B-19, Op. House	7,700.00		
Cont. B-21, Misc. Elect	1,331.20		
Cont. B-25, Vaulted Walks	3,266.90		
Field Engr. and Insp			5,615.17
Inspection Service			838.16
Division Office Overhead			1,538.86
Property Damages			58,076.80
Cost of Settlement			4,741.97
Temp. Maint. Supplies			1,857.39
Temp. Power for Op			1,367.52
Temp. Maint. Nav. O. H			960.00
Accident			84.50
Clock			8.68
Blue Print Service			877.41
Misc. Off. Expenses and Sup			10,472.66
Tot	$238,862.62	$60,000.00	$102,314.97

JACKSON STREET BRIDGE—JOLIET, ILLINOIS

Contracts on Waterway closed out after July 1, 1930	Contract	Paid by others	Other costs to the State
Costs after July 1, 1930:			
Bids and Judging			$1,383.33
Cont. BE-1, 2d Design	$ 8,476.67		
General Office Design			8,781.96
Cont. B-6, Sub. str	45,548.44		
Paid by City of Joliet		$ 7,357.46	
Cont. B-4, Superstr	101,988.12		
Paid by City of Joliet		15,066.64	
Cont. B-19, Oper. House	7,500.00		
Cont. B-21	776.50		
Field Engr. and Insp			2,232.11
Inspection Service			845.35
Division Office Overhead			952.38
Temp. Maint. Supplies			1,857.38
Temp. power to operate			911.68
Temp. Maint. of Nav. O. H			960.00
Clock			8.68
Blue Print Service			543.01
Misc. Office Expense and Sup			5,499.42
Total	$164,289.73	$22,424.10	$23,975.30

RUBY STREET BRIDGE—JOLIET, ILLINOIS

Costs after July 1, 1930:			
Biding and Judging			$ 1,383.34
Cont. BE-1, 2d Design	$ 26,451.25		
General Office Design			38,197.22
Cont. 17-A, Substructure	172,178.97		
Cont. 17-D, Superstructure	328,238.78		
Paid by Div. of Highways		$6,802.27	
Cont. B-19, Oper. House	8,435.20		
Cont. B-22, Old Bridge	4,200.00		
Field Engr. and Insp			45,365.83
Inspection Service			198.93
Division office overhead			2,786.84
Temp. Nav. Lights			80.78
Clock			8.67
Paint by Div. Waterways	1,073.90		
Paint by Div. Highways		660.00	
Blue Print Service			1,588.97
Misc. Office Expense & Sup			17,107.52
Tile			30.00
Moving Pole line			594.79
Total	$540,578.10	$7,462.27	$107,342.89

The completion of the above work since July 1, 1930, at the above costs, leaves a balance of forty-one thousand nine hundred two dollars and fifty cents ($41,902.50) for final payments.

Photographs showing the original bridges and the completed new bridges are shown under illustrations.

DAMAGE CLAIMS.

Damage claims totaling $427,922.09 remained unsettled on July 1, 1934. The amount of $108,560.18 of these claims was settled during the period of the Eighteenth Annual Report by an award of $26,876.80, as shown in the table below. Additional claims amounting to $250,909.18 were settled for $56,626.80 by agreement. The balance of the claims amounting to $68,452.73 were referred to the Court of Claims for settlement as to amount. Evidence was heard at Joliet and testimony taken for the Court records. The following table indicates the original amount of the claim, the amount awarded and the date of award:

Name of Claimant	Amount of Claim	Amount Awarded	Date
Fred Grassele	$77,460.18	$18,076.80	Sept. 15, 1934
Frederick Rub	14,000.00	3,000.00	Dec. 21, 1934
Burke and Marso	500.00		Dec. 21, 1934
J. I. St. Julien's Sons	14,600.00	5,800.00	Dec. 21, 1934
Samuel Stein	2,000.00		Dec. 21, 1934
Total	$108,560.18	$26,876.80	

The balance of the claims were settled by agreement with the Department of Public Works and Buildings as to amount, and the following table indicates the original amount claimed, the amount agreed upon and the date of settlement:

Name of Claimant	Amount of Claim	Amount of Settlement	Date
Fred J. Walsh	$52,860.00	$4,000.00	Jan. 28, 1935
William McVey	17,075.00	6,500.00	July 20, 1934
A. W. & C. F. Bush	30,344.00	5,500.00	Dec. 17, 1934
Inland Iron Works	34,970.00	9,000.00	July 12, 1934
Sophia Braun	7,100.00	4,750.00	Jan. 14, 1935
Total	$250,909.18	$56,626.80	

There were two claims standing as unsettled, they being S & H Motors and Kexel-Skrinar, and due to a repeal of the section of the Waterway Act providing for payment of damages, and lack of funds in the Waterway Construction Fund, these cases must be filed in the Court of Claims for settlement. The Division of Highways, who assumed the construction of the approaches to the Ruby Street bridge, Joliet, took care of the claims arising out of the construction of the Ruby Street bridge. In total, claims amounting to $843,114.06 were made against this department which were settled for $223,573.49.

BARGE TERMINAL.

All contracts were completed on the Barge Terminal during this year and a report by Mr. Thomas B. Casey, Terminal Engineer, appears in this report.

BUREAU OF MAINTENANCE AND OPERATION.

During the year a study was made into contracts and current consumption of various bridges, the result of which reduced the operating costs to approximately 26 per cent of what they formerly were on the Joliet bridges.

Not a single accident has occurred in the operation of these bridges during the year and every case of trouble has been cleared up in such a way as to not delay river transportation, due to the fine control exercised over this branch by the organization under Mr. Gunni Jeppesen, Maintenance Engineer.

BUREAU OF SURVEYS AND INVESTIGATIONS.

The work during the year has been outlined by Mr. Frank S. Brown now Chief of the Bureau, as follows:

With the completion of the bridge building program of the Illinois Waterway, the survey party that had been on location of construction was transferred on February 1, 1935 to headquarters in the Illinois and Michigan Canal office in Lockport, Illinois. The personnel consisted of five field men and two draftsmen.

The purpose of the survey is to locate the Illinois and Michigan Canal, its ninety-foot reserve and all property belonging to the canal and State; to note and plat all buildings and encroachments on the same, and monument all property and permanent survey lines.

The work was started February 1, 1935 and up to July 1, 1935 the survey had progressed as far north as Romeo in DuPage County and south to McKinley Woods on the east line of Grundy County; and included the DuPage Feeder between Joliet and Channahon. A control line is being run adjacent to the canal, usually on the towpath side with the starting or zero stationing at the beginning of the canal at Ashland Avenue, Chicago. It is planned that all subsequent leases of canal land shall be referred to by a station number on this control line, which is being permanently marked with concrete markers bearing brass plates. The notes of this survey are being plotted on maps of the scale one inch per hundred feet.

In addition to the canal survey, the field party assisted on location work on the Ruby Street bridge until it was completed; a property survey of the Chicago Retort and Fire Brick Company near Ottawa, Illinois; survey of several islands in the Fox, Illinois and Kankakee rivers; soundings on the Santa Fe Slip in the Chicago River on which the Terminal building is situated; survey of the proposed straightening of the DesPlaines River between Ninth and Sixteenth Streets, Lockport, Illinois, and numerous other small surveys.

BUREAU OF ILLINOIS AND MICHIGAN CANAL.

Some of the buildings on the Illinois and Michigan Canal have been repaired and reconditioned by CWA and relief forces, using materials supplied by the State.

Much very good work has been done by the CCC to make the canal and its reserves into a park area. This work is shown in a report which follows and submitted by John F. Nichols, Auditor of the Illinois and Michigan Canal.

NATIONAL PARK SERVICE STRUCTURES

AND

ILLINOIS WATERWAY BRIDGES.

ILLUSTRATIONS.

TYPICAL STRUCTURES BUILT ALONG THE ILLINOIS AND MICHIGAN CANAL BY CIVILIAN CONSERVATION CORPS.

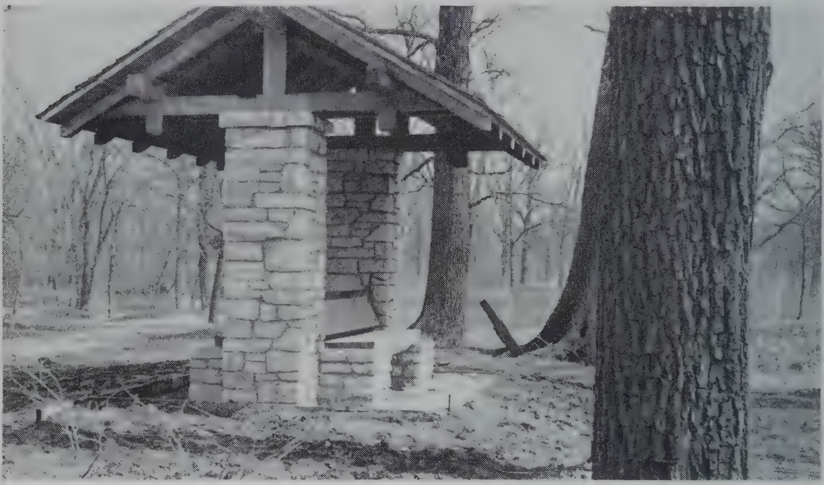


Figure No. 1. At McKinley Woods near Dresden.

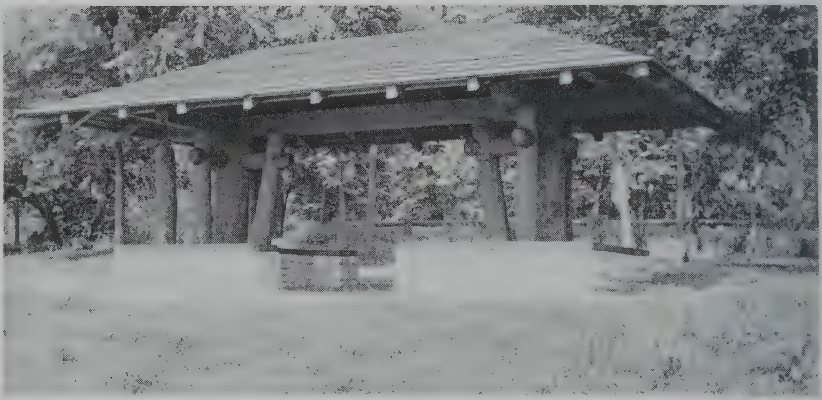


Figure No. 2. Near the Kankakee Feeder.

TYPICAL STRUCTURES BUILT ALONG THE ILLINOIS AND MICHIGAN CANAL BY CIVILIAN CONSERVATION CORPS.

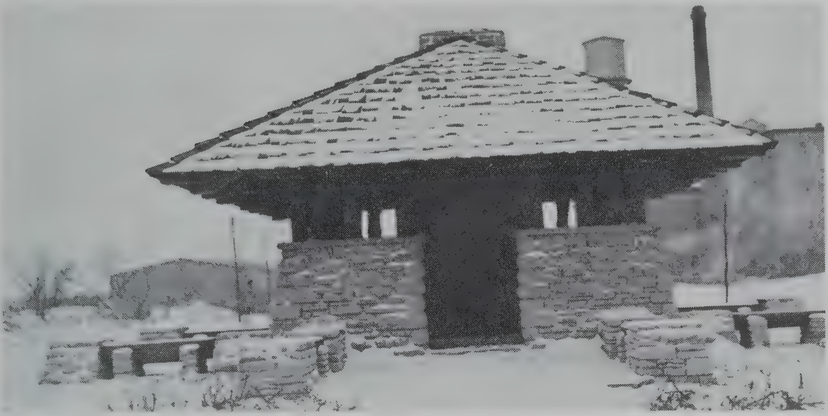


Figure No. 3. At Lockport near 9th Street.

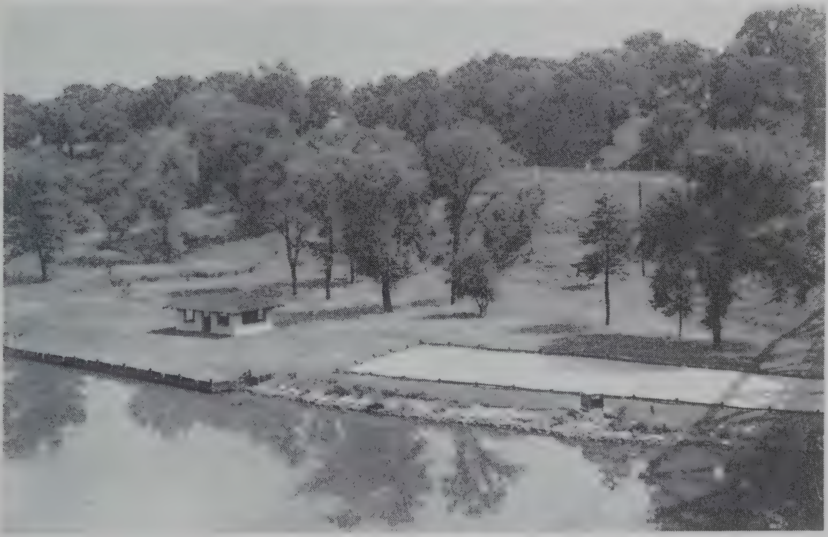


Figure No. 4. Stone Log Shelter and parking area and boat landing on State property along south bank of Illinois River in Ottawa.

TYPICAL STRUCTURES BUILT ALONG THE ILLINOIS AND MICHIGAN CANAL BY CIVILIAN CONSERVATION CORPS.

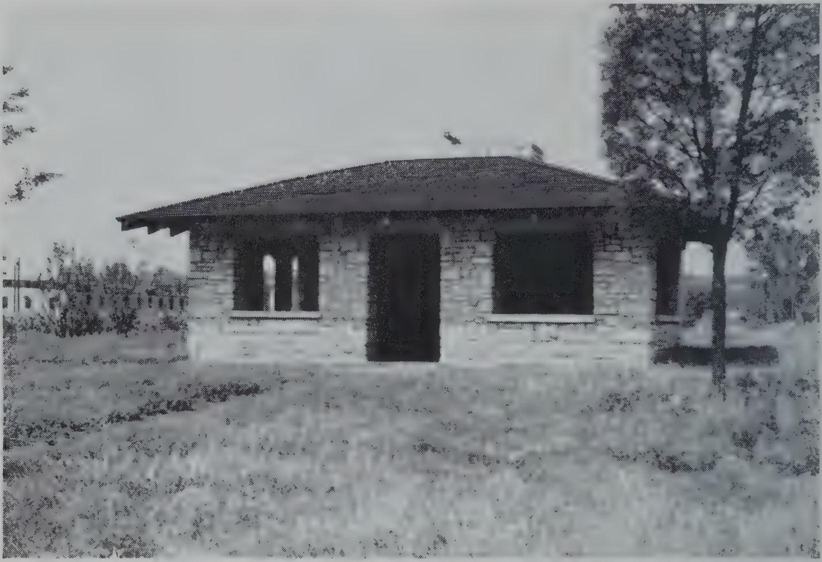


Figure No. 5. At the intersection of the Illinois and Michigan Canal and the lateral canal in Ottawa.

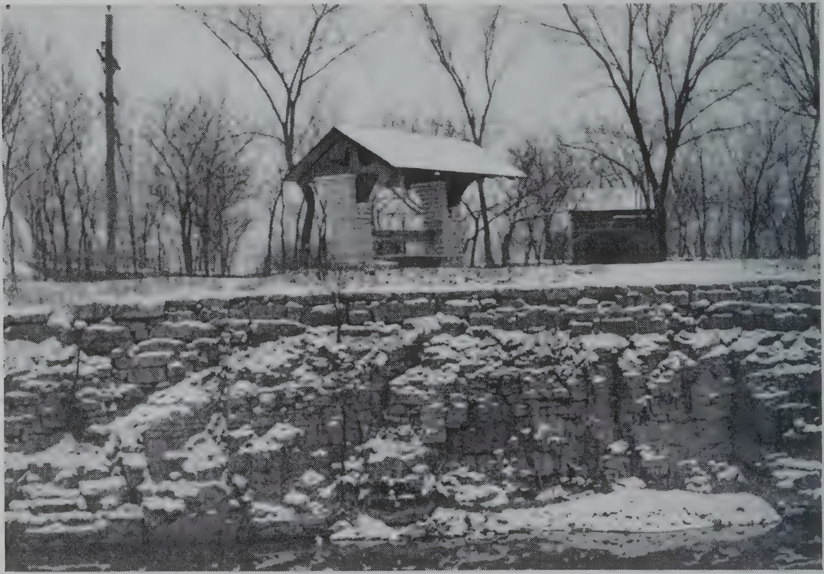


Figure No. 6. Located north of Romeo.

TYPICAL STRUCTURES BUILT ALONG THE ILLINOIS AND MICHIGAN CANAL BY CIVILIAN CONSERVATION CORPS.

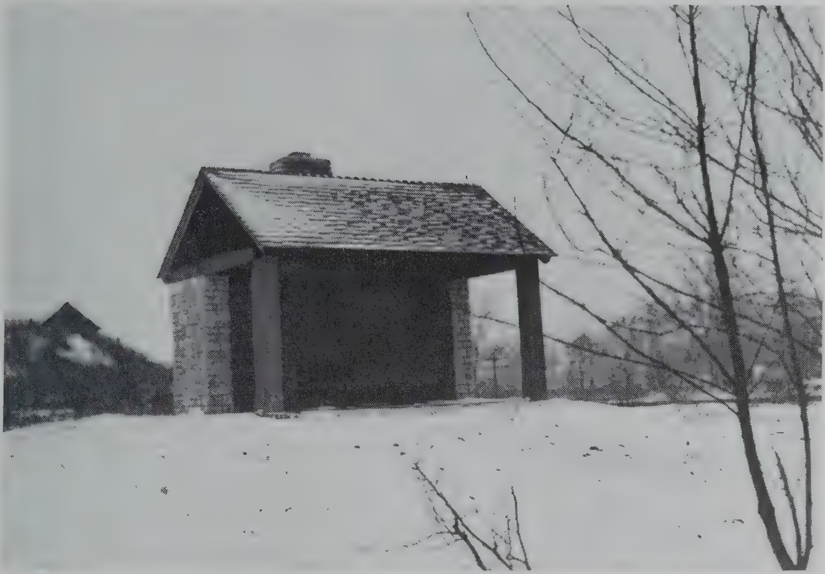


Figure No. 7. Located one-half mile south of Romeo.

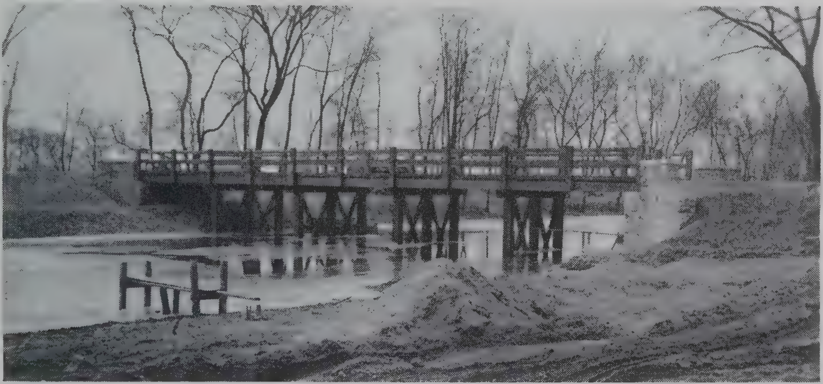


Figure No. 8. Vehicle bridge at McKinley Woods near Dresden.

TYPICAL STRUCTURES BUILT ALONG THE ILLINOIS AND MICHIGAN CANAL BY CIVILIAN CONSERVATION CORPS.

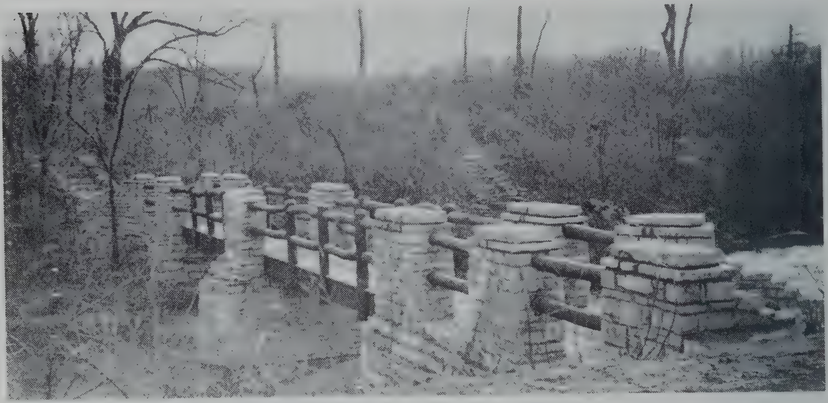


Figure No. 9. Foot bridge south of Willow Springs.

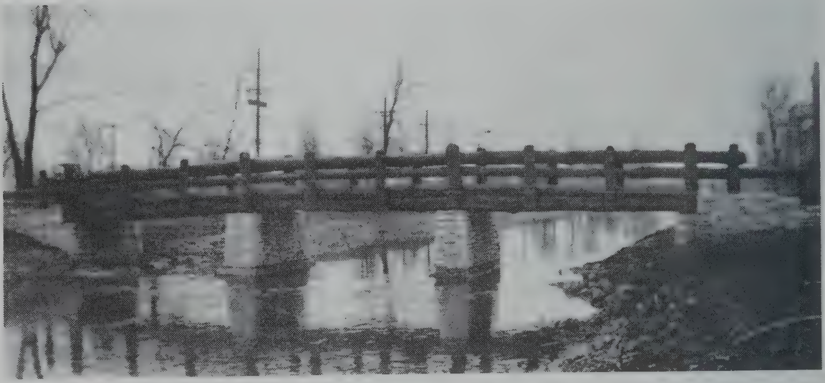


Figure No. 10. Foot bridge at 12th Street, Lockport.

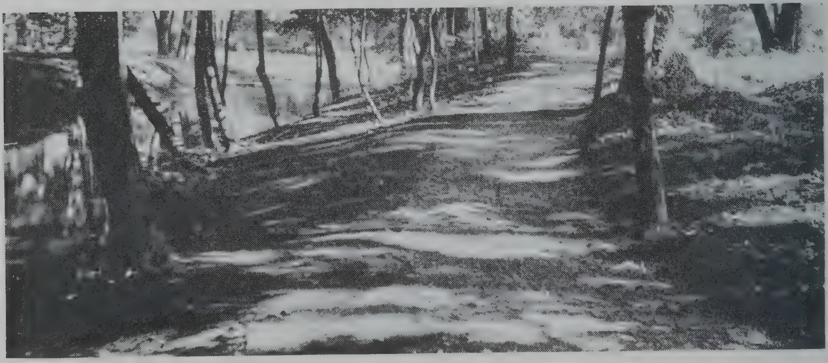


Figure No. 11. Towpath between Channahon and McKinley Woods as improved by the Civilian Conservation Corps.

TYPICAL STRUCTURES BUILT ALONG THE ILLINOIS AND MICHIGAN CANAL BY CIVILIAN CONSERVATION CORPS.

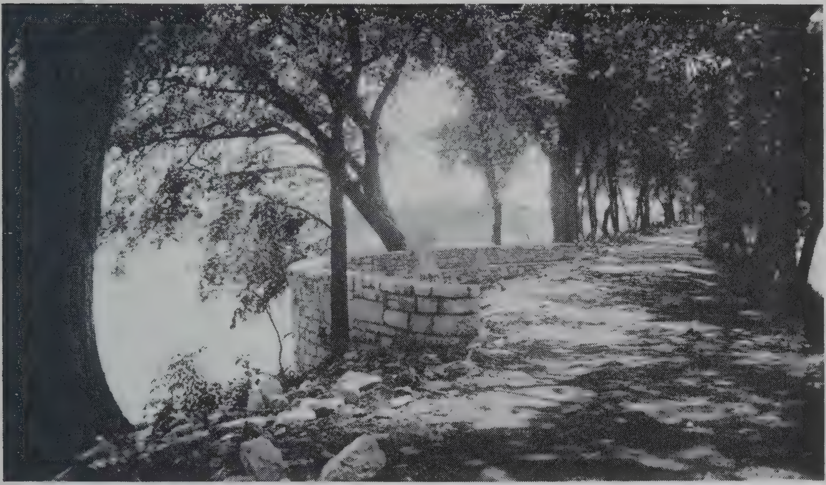


Figure No. 12. Turnout in towpath between Channahon and McKinley Woods as built by the Civilian Conservation Corps.

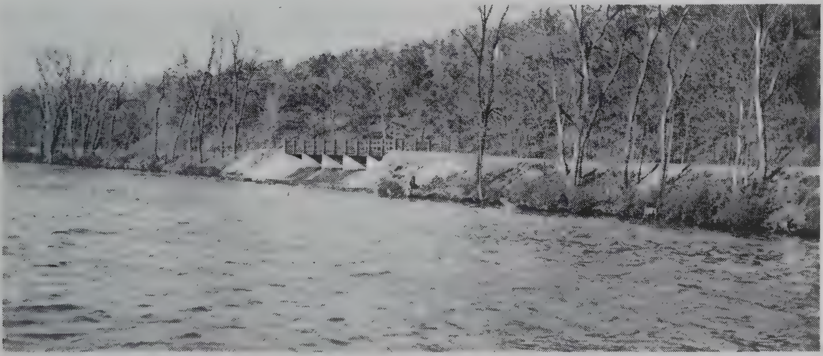


Figure No. 13. Fixed level spillway of the Kankakee Feeder as built by the Civilian Conservation Corps.

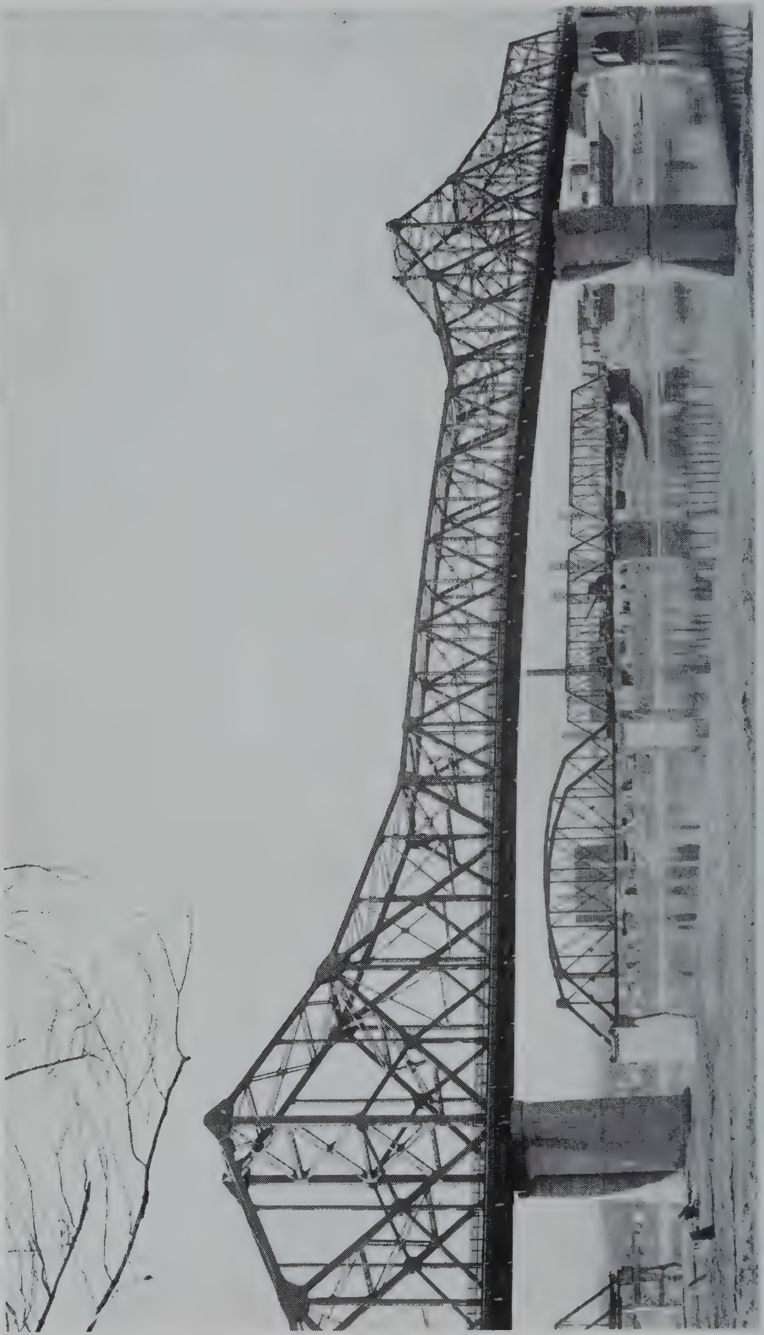


Figure No. 14. View showing the New Hilliard Bridge at Ottawa which replaced the old LaSalle Street Bridge shown in the background with one span removed.

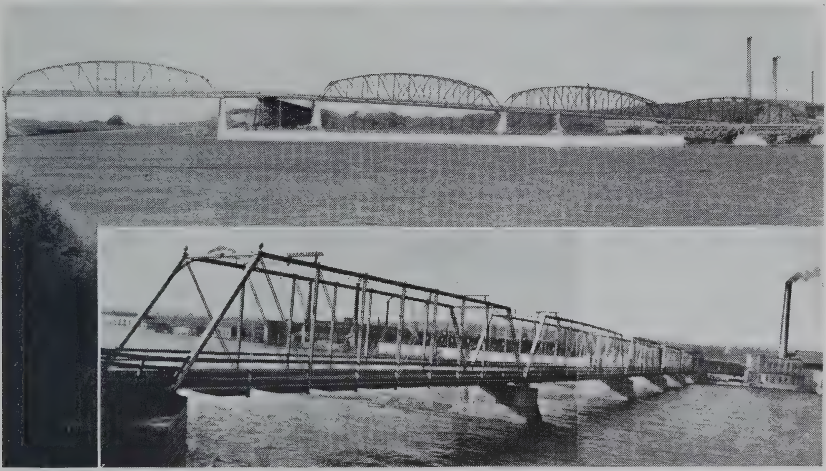


Figure No. 15. View looking downstream showing the old and new Marseilles bridge and the entrance to the Marseilles Canal.

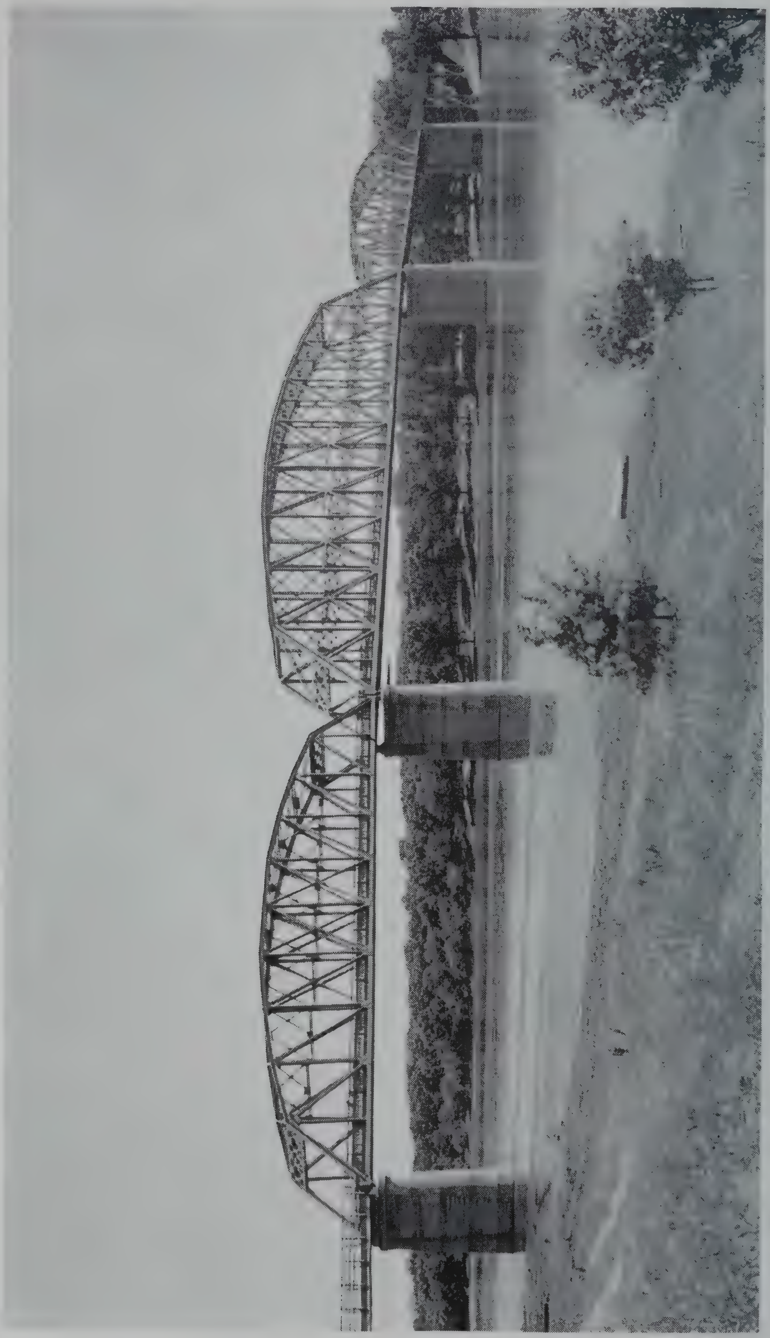


Figure No. 16. View showing the new Smith's Bridge near Channahon.

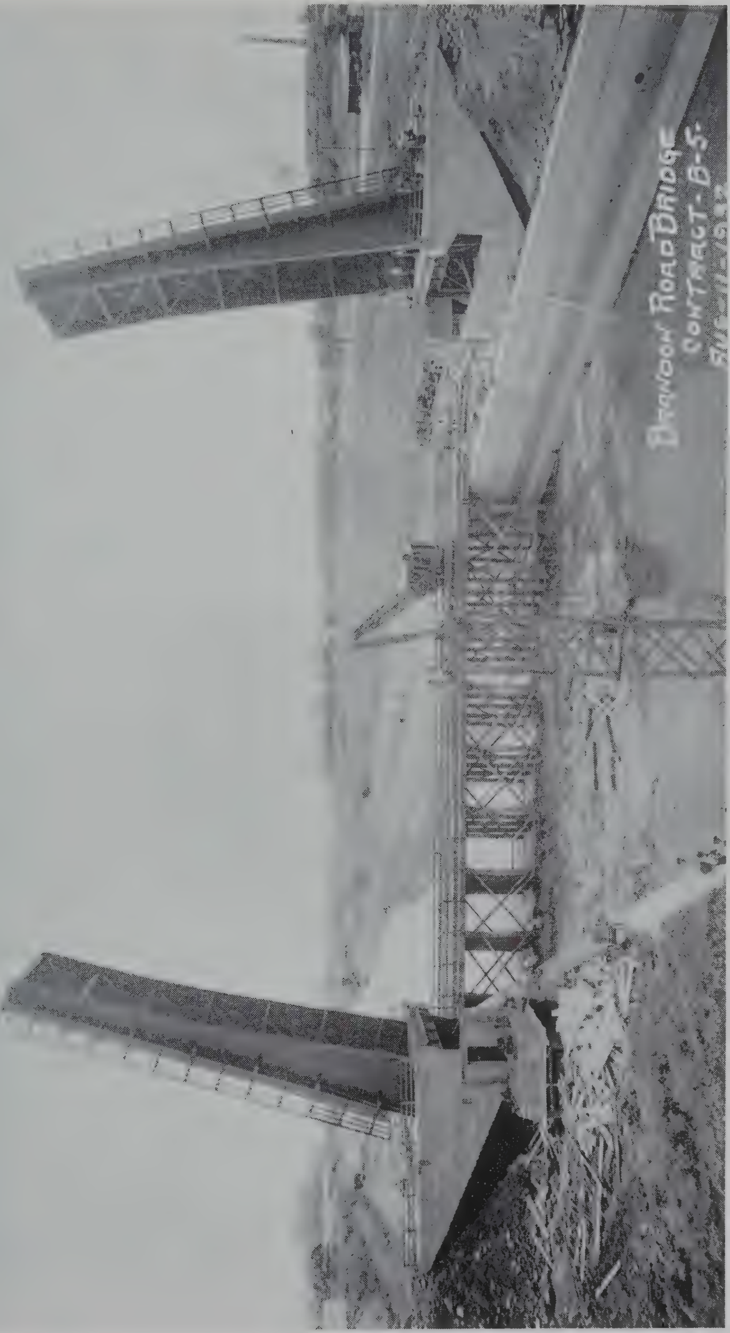


Figure No. 17. View of Brandon Road Bridge looking downstream and showing the Brandon Canal between the locks and the river channel below.

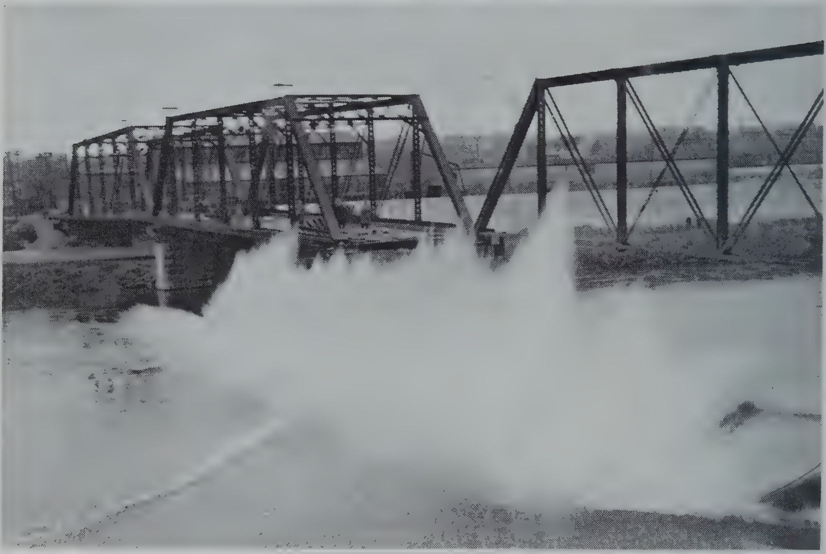


Figure No. 18. View of the old McDonough Street Bridge at Joliet looking upstream, taken during the wrecking. The south truss has just been dropped into the channel.

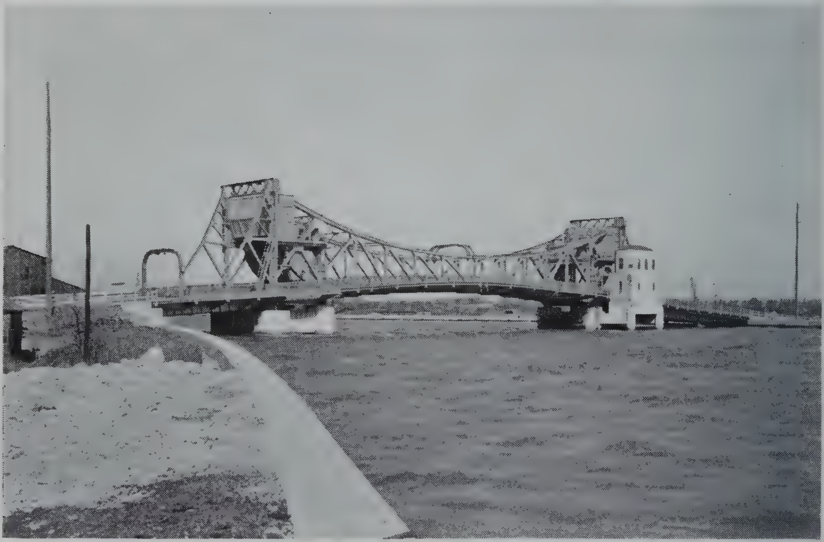


Figure No. 19. View of the completed new McDonough Street Bridge at Joliet looking upstream.

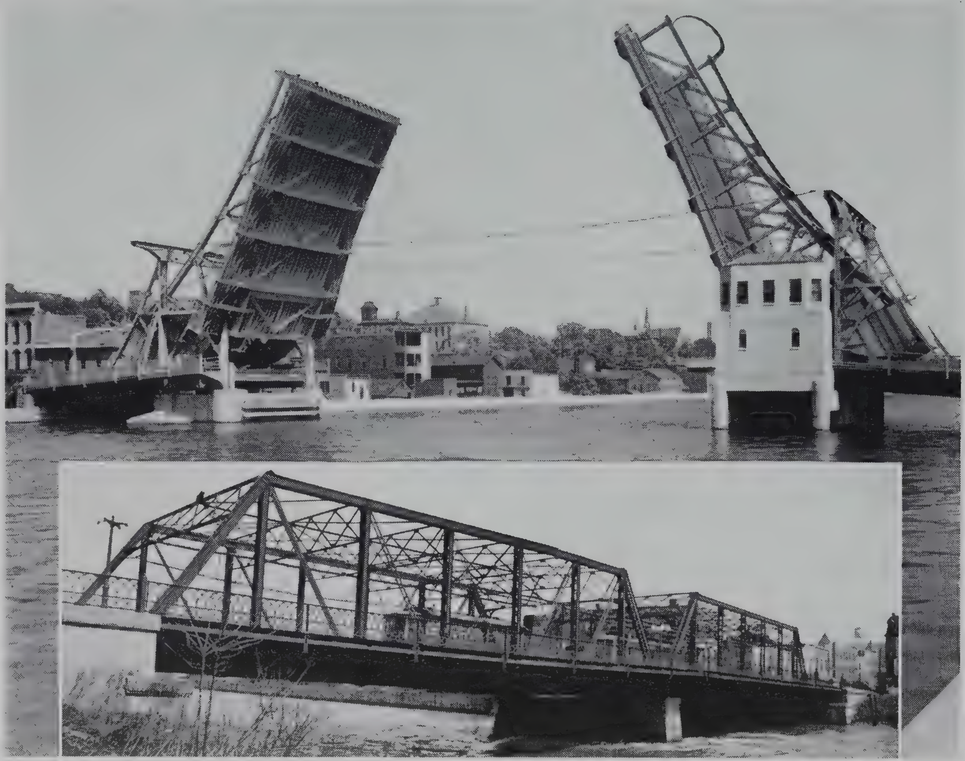


Figure No. 20. View showing the old and new Jefferson Street Bridge at Joliet.

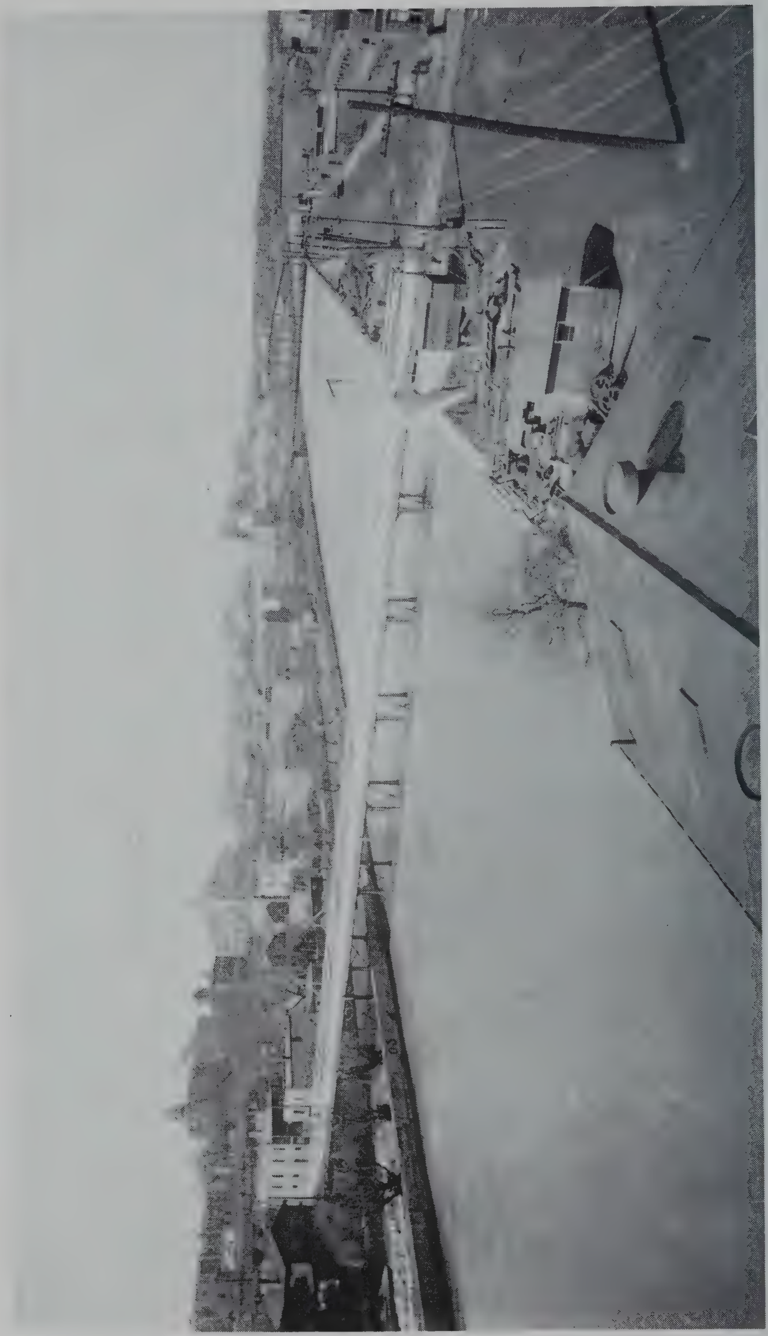


Figure No. 21. View showing the temporary bridge at Van Buren Street, Joliet, built to take the traffic from Cass and Jefferson Streets during construction of these bridges. Later removed.

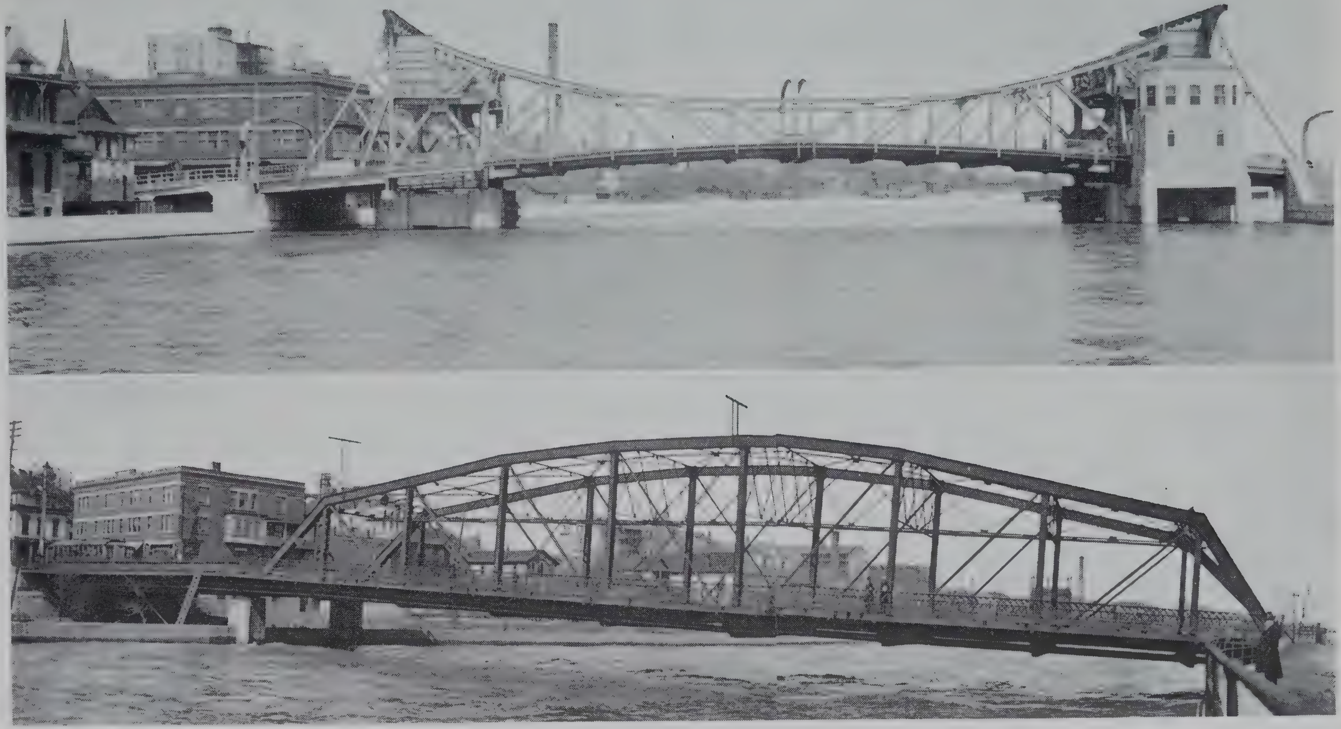


Figure No. 22. View looking upstream showing the old and new Cass Street Bridge at Joliet.

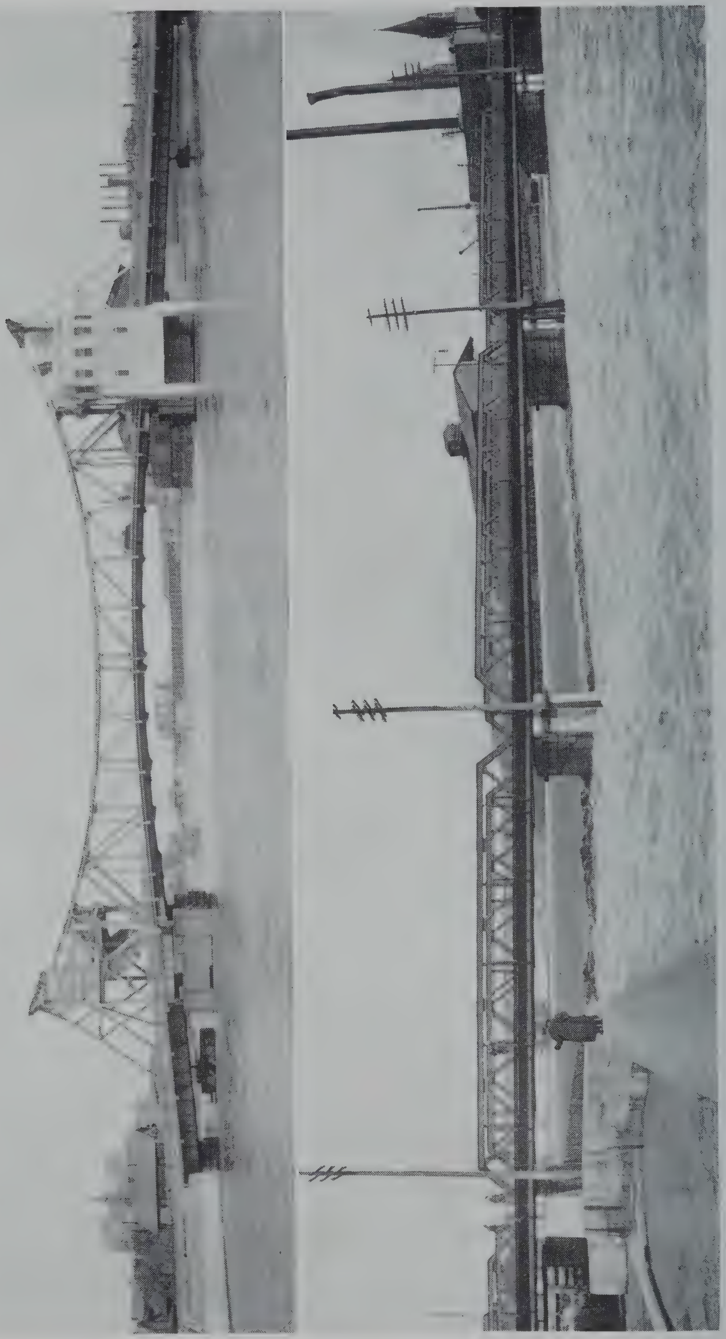


Figure No. 23. View showing the old and new Jackson Street Bridge and the Illinois and Michigan Canal water power development which was destroyed by the new pool elevation at Joliet.

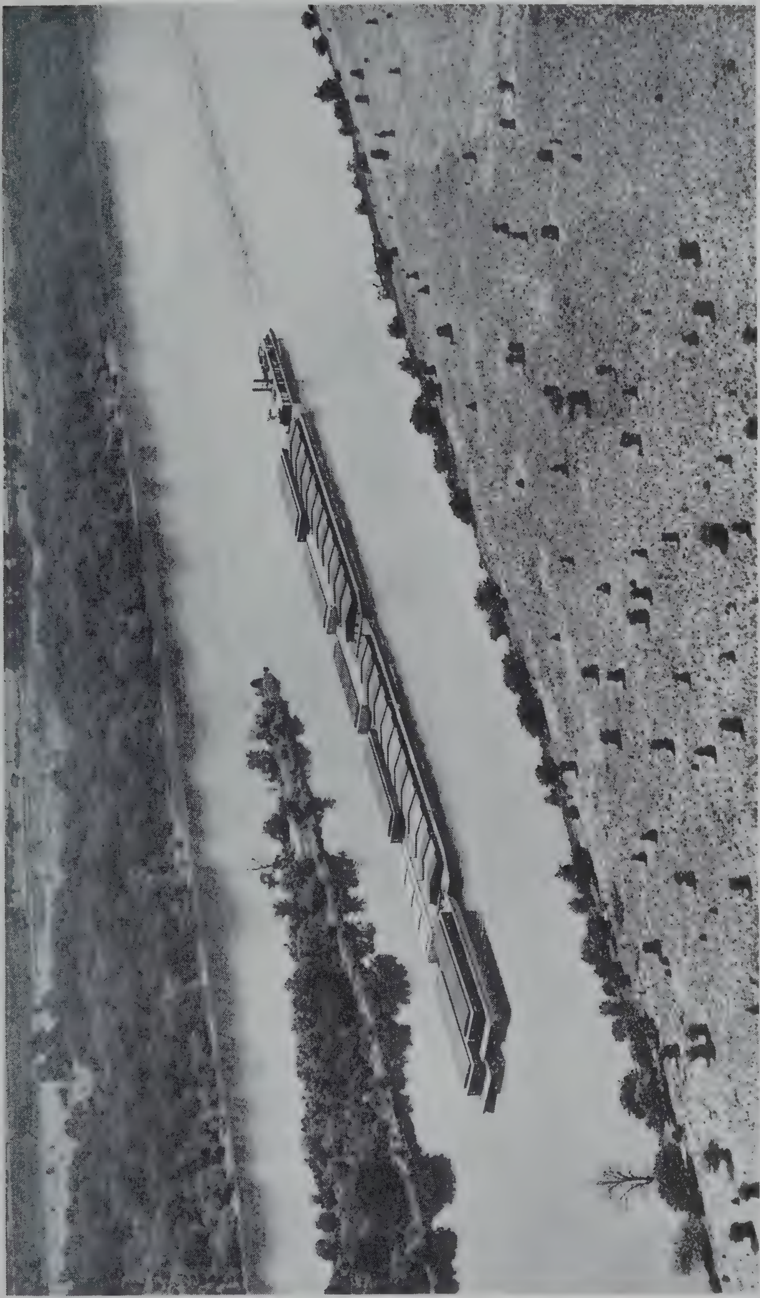


Figure No. 24. Aerial view of tow at Treats Island downstream from Joliet in the Dresden pool.

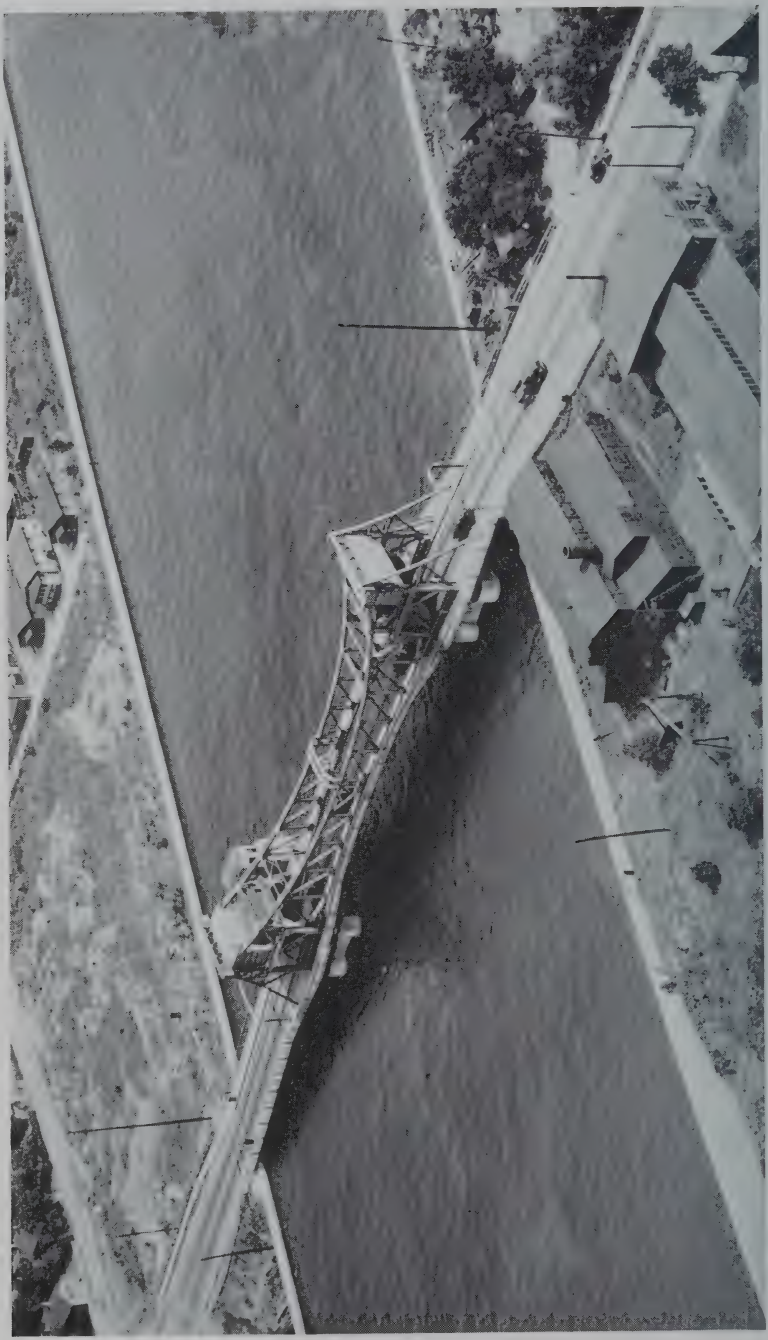


Figure No. 25. Aerial view of McDonough Street Bridge looking south at Joliet.

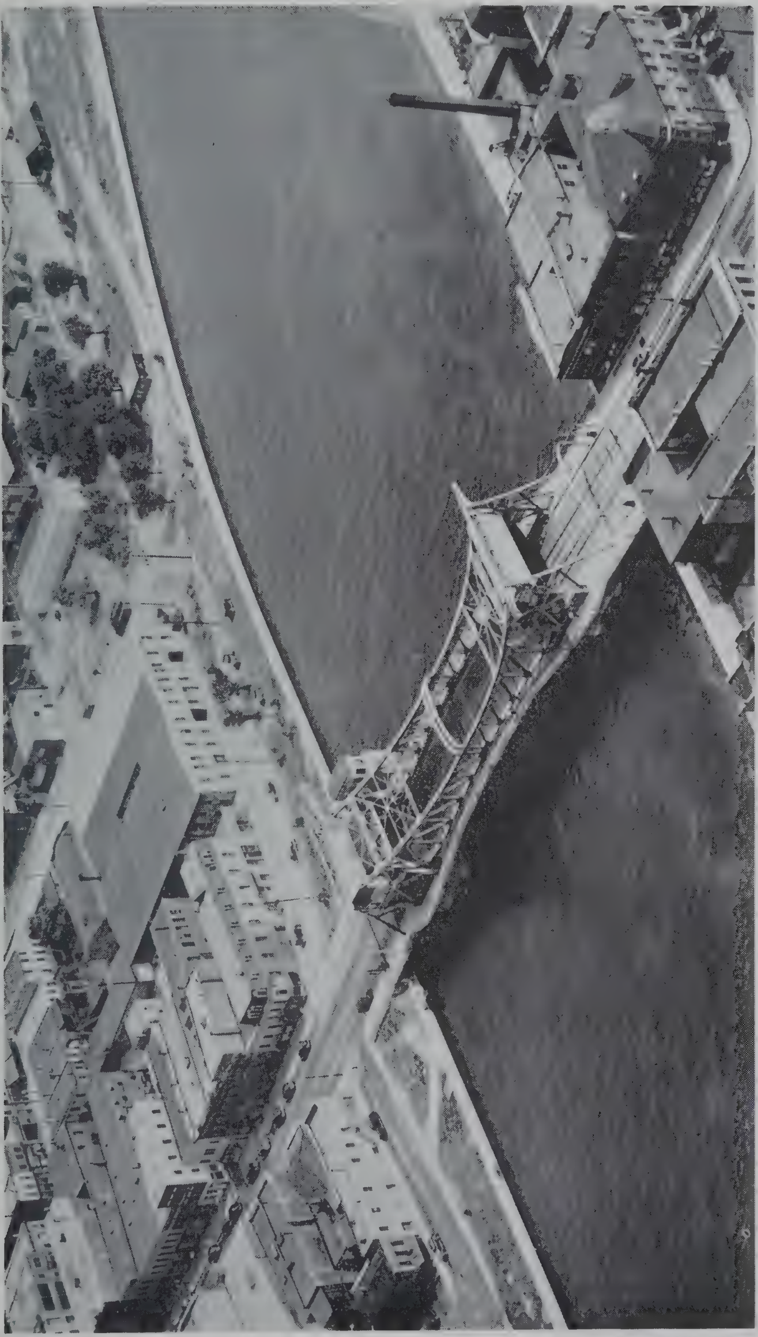


Figure No. 26. Aerial view of Jefferson Street Bridge looking south at Joliet.

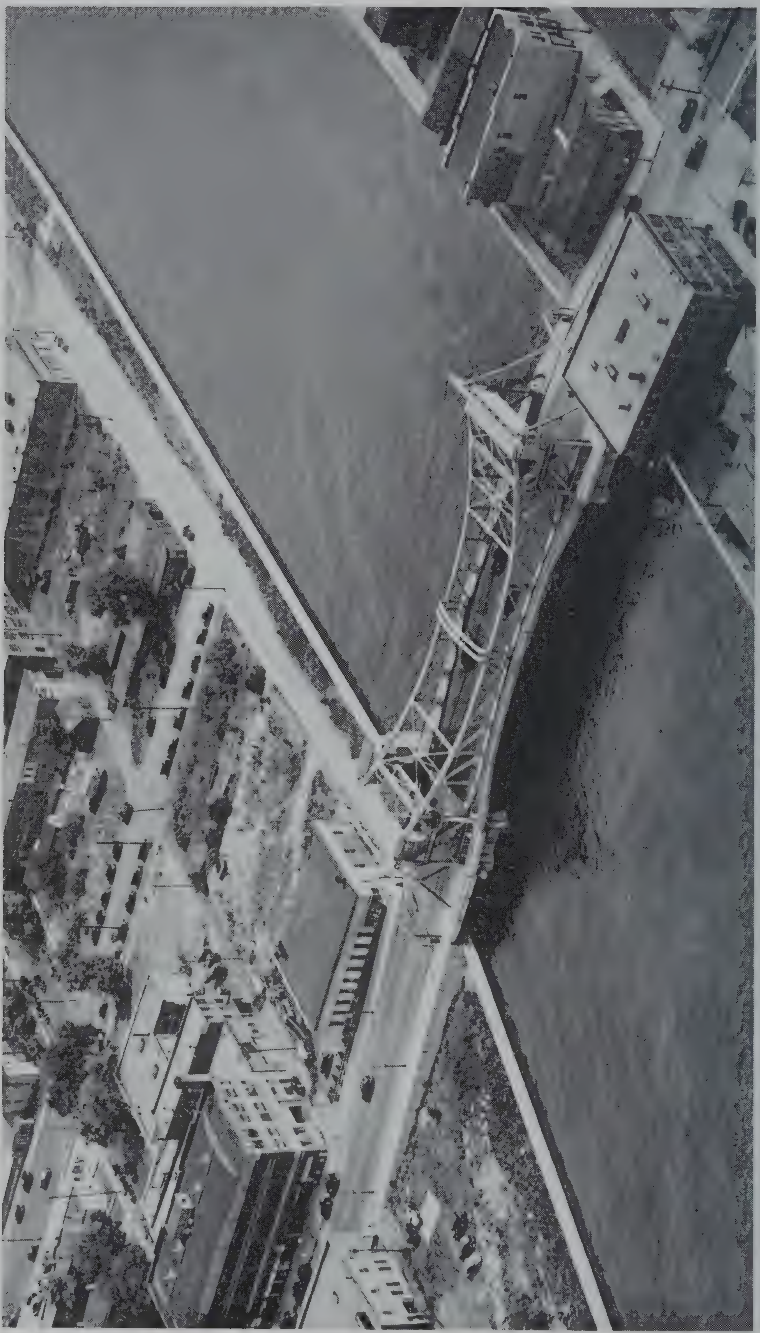


Figure No. 27. Aerial view of Cass Street Bridge looking south at Joliet.

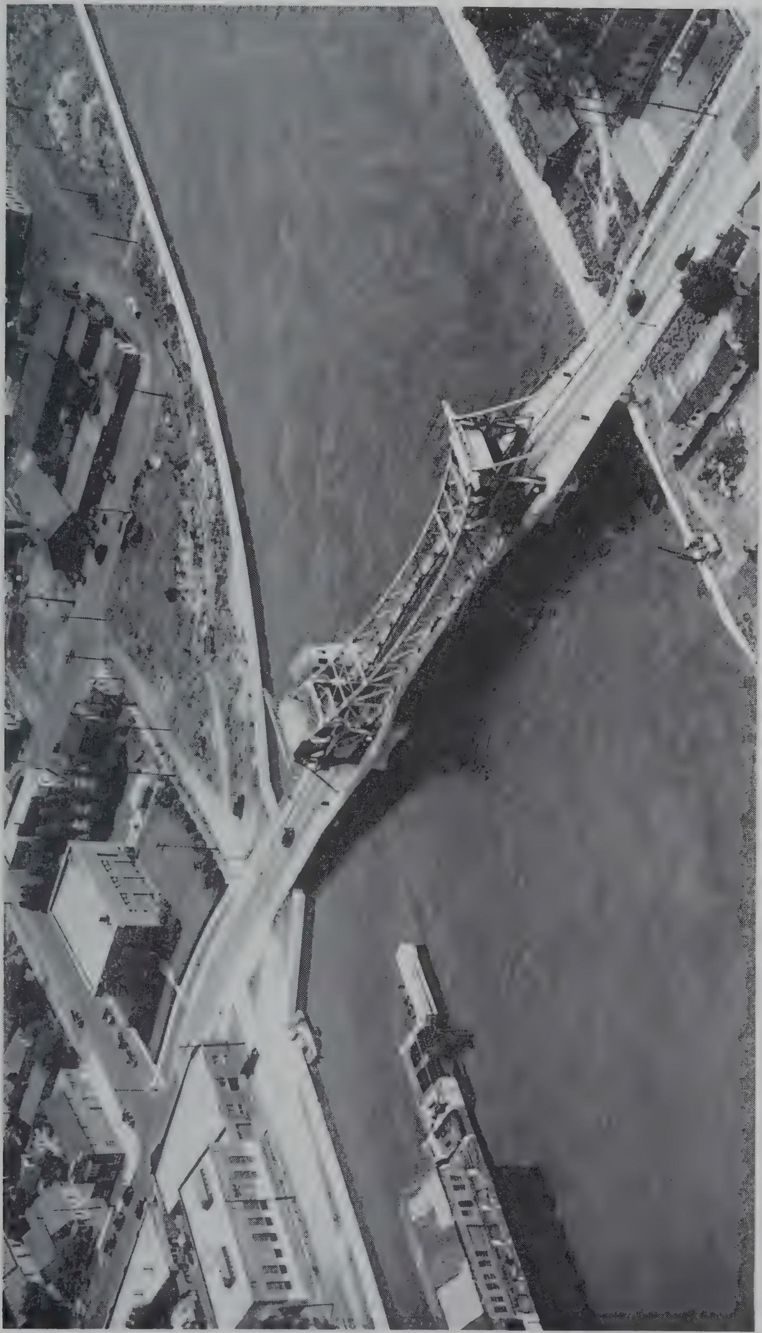


Figure No. 28. Aerial view of Jackson Street Bridge looking south at Joliet.

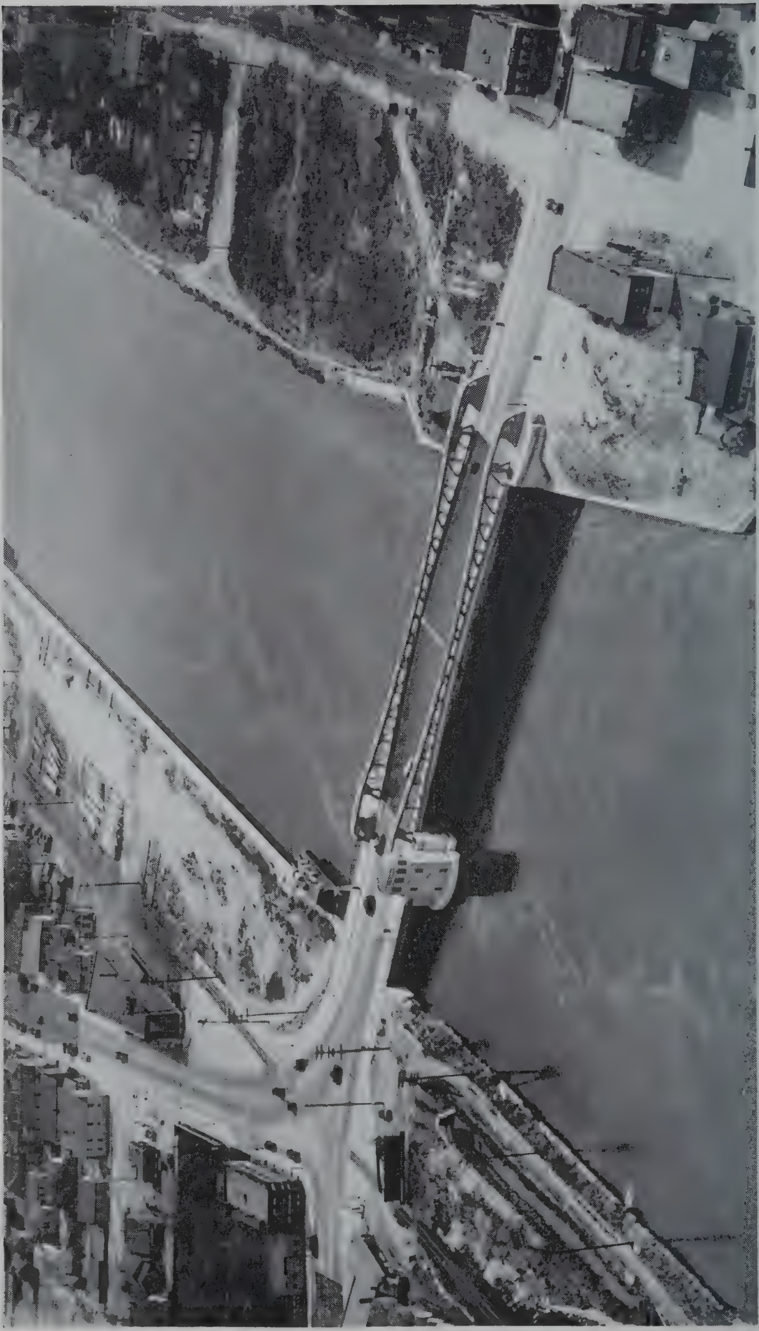


Figure No. 29. Aerial view of Ruby Street Bridge looking south at Joliet.

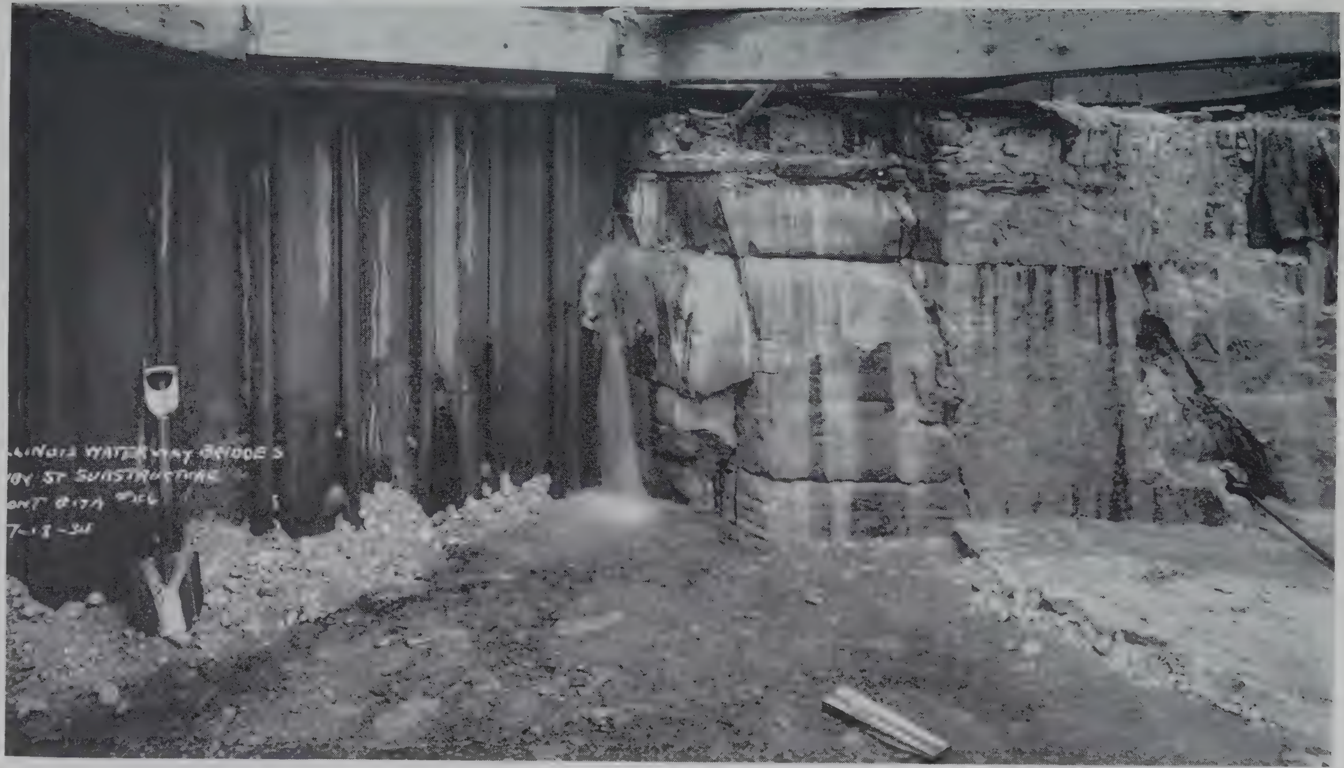


Figure No. 30. Ruby Street Bridge, Joliet. Rock formation at site of East Pit.

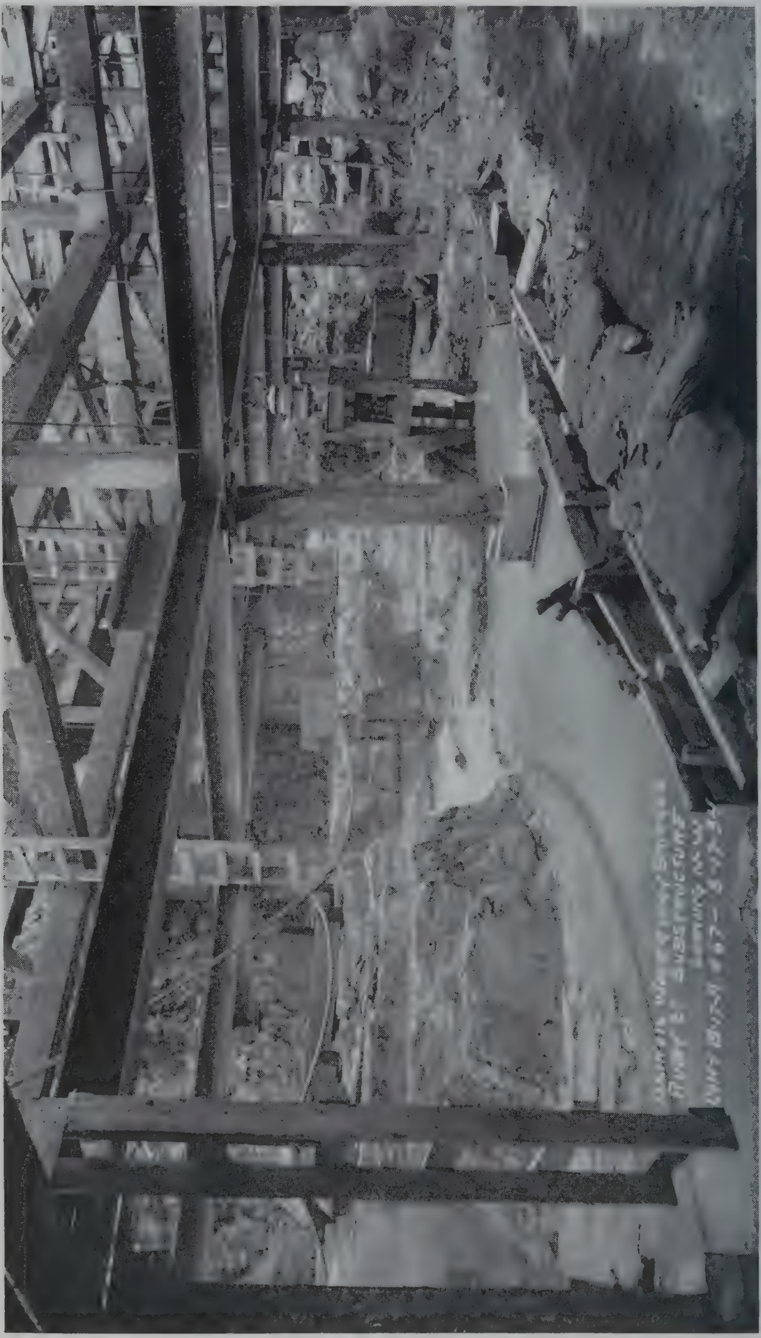


Figure No. 31. Ruby Street Bridge, Joliet. Inside view of cofferdam for east pit.

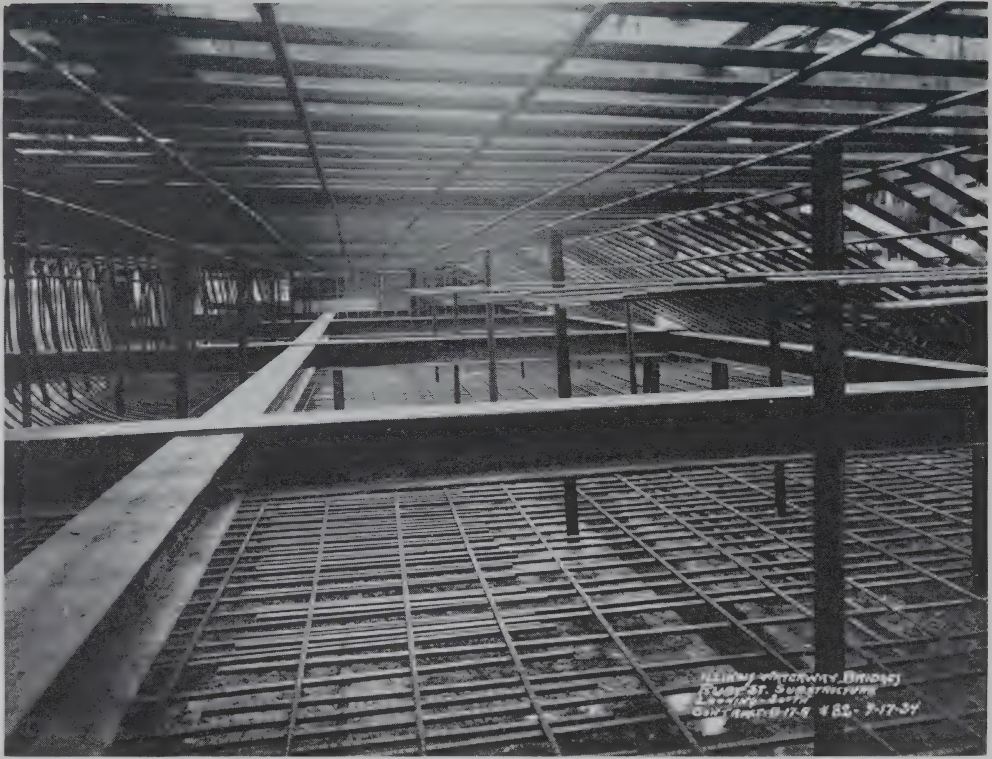


Figure No. 32. Ruby Street Bridge, Joliet. Steel reinforcement for bottom slab of East Pit, showing top and bottom reinforcement and steel cofferdam bracing, which was left in place.

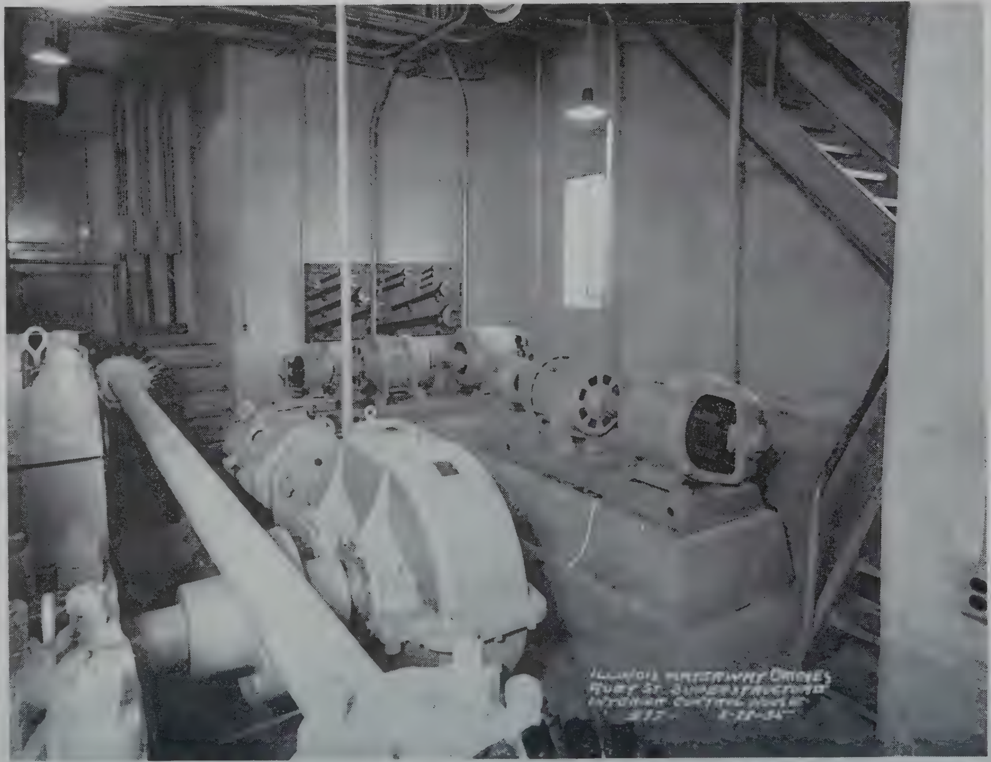


Figure No. 33. Ruby Street Bridge, Joliet. General view of northeast Machinery Enclosure, showing the two motor-generator sets and one of the D. C. operating motors. In the background are seen the terminals of the three submarine cables.

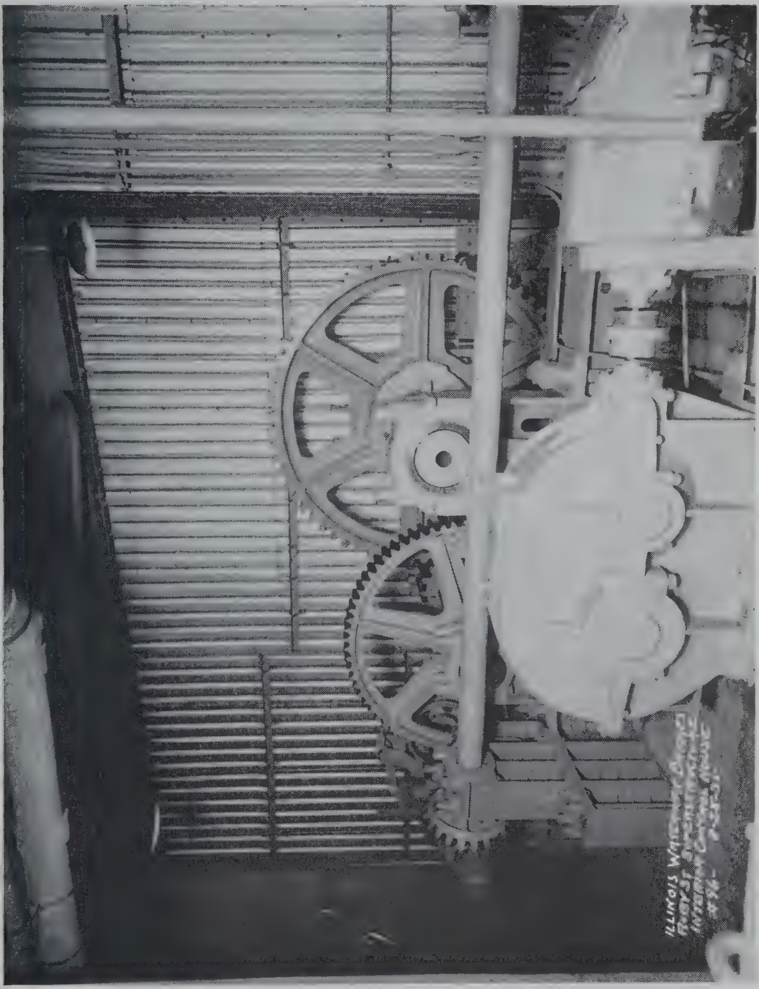


Figure No. 34. Ruby Street Bridge, Joliet. Part of Operating Machinery showing also asbestos-protected metal partition between machinery enclosure and counterweight pit.

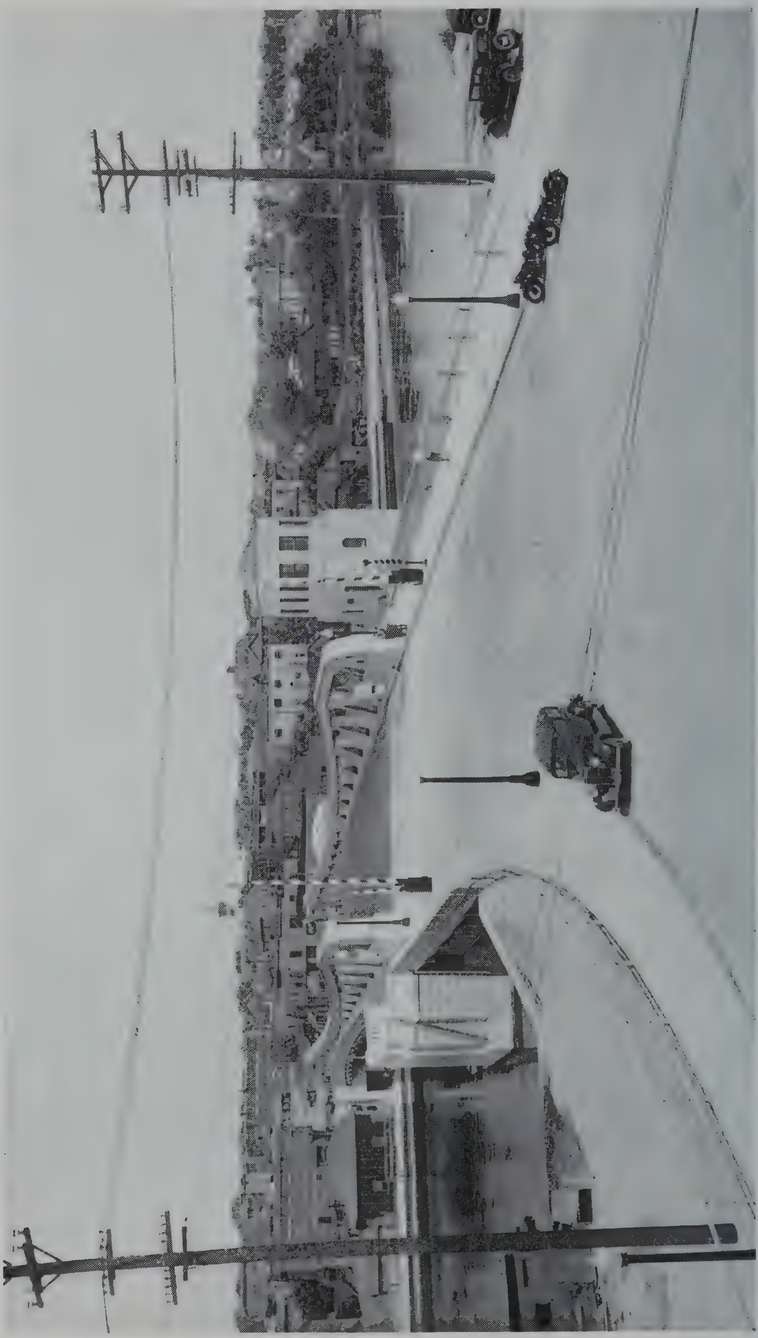


Figure No. 35. Ruby Street Bridge, Joliet. End view looking west.

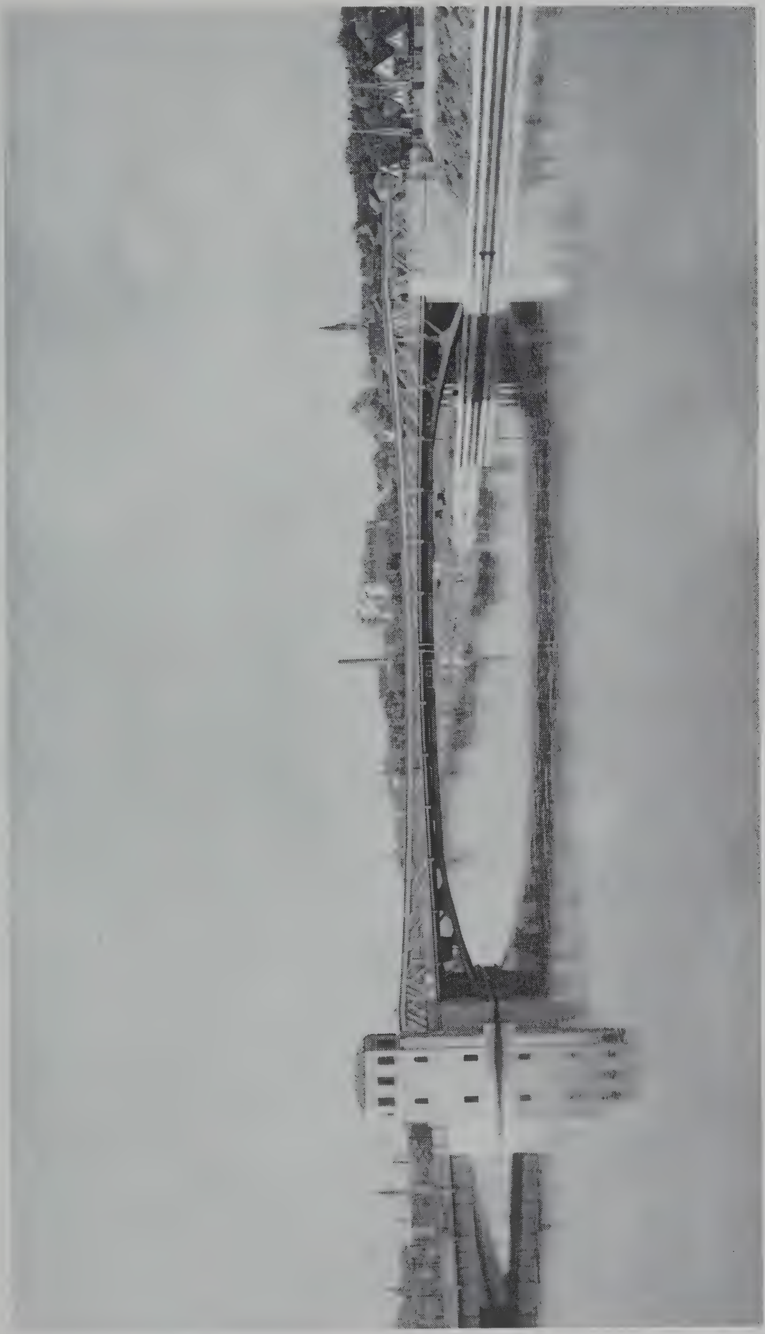


Figure No. 36. Ruby Street Bridge, Joliet. Side view, bridge closed; looking south.

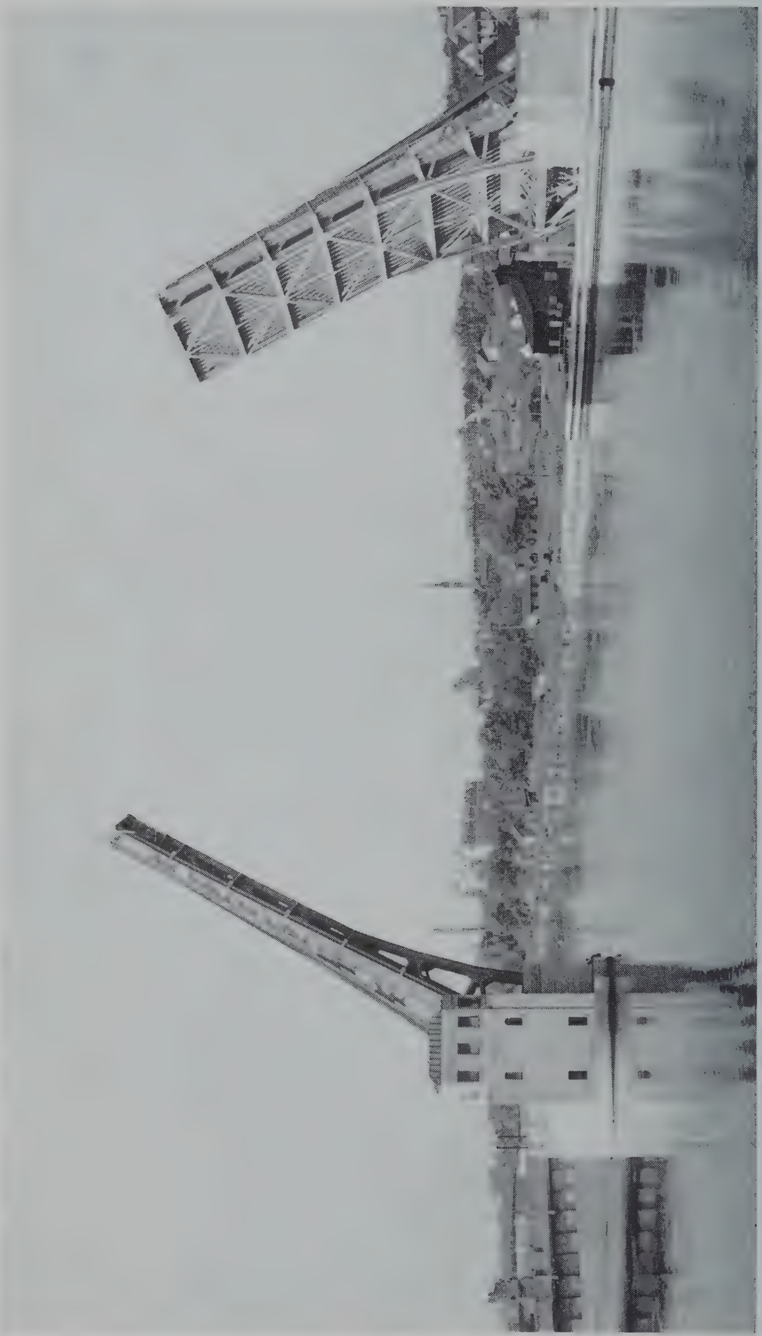


Figure No. 37. Ruby Street Bridge, Joliet. Side view, bridge open; looking south.

BRIDGES.

By Gunni Jeppesen, *Bridge Engineer.*

GENERAL OUTLINE.

The end of the fiscal year 1934-1935, saw the virtual completion of the Illinois Waterway Bridge program and, with that, of the Illinois Waterway itself.

The Illinois Waterway from Lockport to Utica is spanned by eleven public (highway) bridges, and, in addition, the bridge program included a three span bridge across the Illinois River, on a line with the bridge over the Marseilles Canal, and located a short distance below the point where the Canal takes off from the river.

The principal dimensions and characteristics of these twelve bridges, are given in the appended table, in which is also included the temporary bridge at Van Buren Street in Joliet, which was built to relieve traffic in that city while one or more of the other bridges were out of service, but which has since been removed.

ILLINOIS WATERWAY HIGHWAY BRIDGES.

Total Cost Exclusive of Administration, Engineering and Property Damages.

Detailed Costs by Projects.

Ruby Street Bridge—		
Removing old bridge	$ 4,200.00	
Substructure	172,178.97	
Superstructure	335,041.05	
Operator's house	8,435.20	
Street approaches	92,502.81	
Temporary navigation lights	80.78	
Paint	1,733.90	
Tile	30.00	
Moving pole line	594.79	
Clock	8.67	
		$ 614,806.17
Jackson Street Bridge—		
Substructure (Including removal of old bridge)	$ 52,905.90	
Superstructure	117,054.76	
Operator's house	7,500.00	
Approach lighting (Contract B-21)	776.50	
Clock	8.68	
		178,245.84
Cass Street Bridge—		
Substructure (including removal of old bridge)	$ 58,601.46	
Superstructure	164,395.82	
Operator's house	7,700.00	
Approaches	52,724.21	
Vaulted sidewalks (Additional: Contract B-25)	3,266.90	
Miscellaneous electrical equipment	1,331.20	
Clock	8.68	
		288,028.27
Van Buren Street Temoprary Bridge—		
Main contract	$ 32,315.97	
Closing gap in river wall (Contract B-12)	1,921.64	
		34,237.41

Jefferson Street Bridge—		
Substructure (including removal of old bridge)	$ 61,890.40	
Superstructure	162,647.68	
Operator's house	7,700.00	
Approaches	47,253.95	
Vaulted sidewalks (Additional: Contract B-25)	8,400.25	
Miscellaneous electrical equipment	1,571.60	
Clock	8.68	
		$ 289,472.56
McDonough Street Bridge—		
Substructure (including removal of old bridge)	$ 77,608.32	
Superstructure	152,017.07	
Operator's house	8,125.00	
Extra transformer	73.00	
Approaches	24,856.32	
Miscellaneous electrical equipment	57.00	
Clock	8.68	
		262,745.39
Brandon Road Bridge—		
Sub and superstructure	$ 78,895.95	
Changes in abutments	1,129.66	
Clock	8.67	
		80,034.28
Smith's Highway Bridge—		
Removing old bridge	$ 3,770.00	
Substructure	56,707.20	
Change in south abutment	3,508.50	
Superstructure	119,263.64	
Miscellaneous electrical work	1,635.64	
Approach fills*	13,000.00	
		197,884.98
*This information received from Glenn Fletcher, county superintendent of highways.		
Morris Bridge		*280,220.00
*Letter from G. F. Burch, bridge engineer, 4-15-36.		
Seneca Bridge		*168,729.00
*Letter from G. F. Burch, bridge engineer, 4-15-36.		
Marseilles Canal Bridge—		
Substructure	$ 53,668.20	
Superstructure	27,161.32	
Miscellaneous electrical work	901.30	
		81,730.82
Illinois River Bridge at Marseilles—		
Substructure	$ 38,007.02	
Superstructure	69,879.38	
		107,886.40
Hilliard Bridge, Ottawa—		
Removing old bridge	$ 7,600.00	
Substructure	181,662.34	
Superstructure	180,427.30	
Precast slabs	2,997.25	
Extra on walks	33.50	
		372,720.39
Grand total		$2,956,741.51

RUBY STREET BRIDGE.

The Ruby Street Bridge in Joliet is the last of the Illinois Waterway bridges to be completed and will be put into service in July, 1935. It is a double leaf, trunnion bascule bridge with the counterweights below the roadway and descending, when the bridge opens, into watertight concrete pits.

By order of the War Department, the width of the navigation channel was made 200 feet, whereas, it is only 150 feet for the other Joliet bridges, and, inasmuch as the channel at this point forms an angle of 75 degrees with the center line of the bridge, the length of the main span had to be further increased, resulting in a movable span measuring 257 feet from the center to center of trunnions. The width of the roadway is 44′ 0″ and there are two 6-foot sidewalks. Altogether, it is a much larger and heavier bridge than the other Joliet bridges, but, owing to local conditions, it was, nevertheless, possible to give it a better appearance and easier approach grades than the other Joliet bridges, resulting in a structure that has won the approval of all concerned.

The Ruby Street Bridge is operated by variable voltage control. The electric current is delivered by the Public Service Company of Northern Illinois at a transformer vault at the east end of the bridge, in the form of 2,300 volts A. C. and is there stepped down to 460 volts. This current is carried into the machinery enclosure and is used to drive two 75 H. P. motor generator sets which generate 230 volts D. C. with which the operating motors are supplied. The motor generator sets are started by push buttons, and a time element is introduced that makes it impossible to start both sets at the same time, and figures show that, with this arrangement (which limits the momentary inrush of current) the current consumption, or rather the current bills, will be less for this bridge than for the smaller rolling lift bridges in Joliet. This system of control also is more flexible than the ordinary type, gives smoother operation, and protects the operating machinery against excessive overloads.

The bridge is also equipped with two 58 H. P. gasoline engines for use in emergencies.

The excavation for the west pit was made in the dry, as shown in the Seventeenth Annual Report.

The east pit is located in the river which, at this point, has a depth of 10 or 11 feet, and was built within a single wall, steel sheetpile, cofferdam. It was expected that rock would be found at Elevation 528 (pool level is at Elevation 539.2), but in driving the sheetpiling, it was found that the rock fell off sharply to the east along a line roughly parallel with the river face of the pit, and about 10 feet east of this line.

Accordingly, part of the sheetpiling had to be pulled and replaced by longer piles, and changes also had to be made in the design of the pit itself, resulting in increased cost and considerable delay.

The accompanying illustrations show the nature of the rock formation at the site of the pit, and also the details of the cofferdam which involved one tier of steel bracing roughly in the center of the bottom slab of the pit, which varies in thickness from 6′ 0″ to 7′ 9″.

The plans for the Ruby Street Bridge were prepared by the Scherzer Rolling Lift Bridge Company of Chicago.

The principal contractors were:

Substructure, Powers-Thompson Construction Co., Joliet.
Superstructure, Milwaukee Bridge Company, Milwaukee.
Erection, J. S. Theilacker Company, Milwaukee.
Electrical Equipment, Pierce Electric Company, Chicago.
Operator's House, E. H. Swenson, Joliet.

(Note: The erection and electrical equipment were included in the superstructure contract as sub-contracts.)

BRIDGE OPERATION AND MAINTENANCE.

On June 1, 1934 the operation and maintenance of the Joliet bridges were assigned to the bridge engineer's office and on September 1, 1934 the Division of Waterways took over from the Highway Division the operation of the movable bridges belonging to the State and located below Ottawa, namely at Utica, LaSalle, Pekin, Havana, Florence and Hardin. The maintenance of all these bridges is being taken care of under a joint agreement between the two divisions and, in some instances, with the cooperation of the city, or county, in which the bridge is located.

The main dimensions and general characteristics of the bridges above Ottawa will appear from the table following this report.

The LaSalle, Pekin, Florence and Hardin bridges are modern cable lift bridges operated by rack and pinion. The main dimensions of the lift spans are as follows:

	Length of Span.	Width of Roadway.
LaSalle Bridge	260′ 0″	23′ 0″
Pekin Bridge	259′ 0″	23′ 0″
Florence Bridge	215′ 0″	23′ 0″
Hardin Bridge	308′ 9″	22′ 0″

The LaSalle Bridge is operated by gasoline engine while the other three bridges are equipped with electric motors with gasoline engines for use in emergency.

Each of these four bridges has a series of through truss approach spans. A general view of the LaSalle Bridge which is typical of the entire group will be found on page 95 of the Fifteenth Annual Report of the Division of Waterways.

The movable span of the Utica Bridge is a hand operated swing span 300′ 6″ overall.

The Havana Bridge also is a hand operated swing bridge some sixty years old; it is to be replaced by the Division of Highways with a high level fixed bridge on which construction is soon to begin.

Operators are on duty on all these bridges, day and night, the year round, except at the Utica Bridge where the bridge tender is located a short distance from the bridge and is notified by telephone when a vessel is approaching.

The monthly number of openings of each bridge during the fiscal year is recorded in the table following this report; the large number of openings of the Joliet bridges during July, 1934, and January, February and March, 1935, was due to dredging operations being carried on by the U. S. Government in the Brandon Pool.

The bridges are being inspected at regular intervals and are all in good repair except the Havana Bridge which will soon be replaced. Plans are under way for the installation of power equipment on the Utica Bridge, and for equipping the LaSalle Bridge with electric motors. Plans have also been made for replacing the electric heaters in the operators' houses of the Jackson Street, Cass Street, Jefferson Street, and McDonough Street bridges with gas fired, low pressure, steam heating systems.

On the morning of March 15, 1935 the Government Dredge, operating under the Brandon Road Bridge, dug up the submarine cable between the two ends of the bridge, tore it loose from its connections, and damaged it beyond repair.

Work was started at once on the installation of a temporary cable, and by working day and night, the State's maintenance forces, assisted by the Government diver and a crew of men from the local U. S. Area office, succeeded in putting the bridge back into service by 3:00 p. m. on March 17th. The U. S. Engineer office then proceeded to advertise for bids on a new, permanent, cable which is being installed without cost to the State.

ILLINOIS WATERWAY HIGHWAY BRIDGES

Name of Bridge	Location	Type	Navigation Cleanances		Width		Length of Spans			Design Load	Design Specifications	[1]Total Cost
			Hori-zontal	Verti-cal	Road-way	Side-walks	Main Span	Side Spans	Approach Viaducts			
Ruby Street	Joliet	Double Leaf Trunnion Bascule	200′	47′	44′-0″	2-6′-4″	257′-0″	2-30′- 1″ 1-71′-10″	None	H20	A.A.S.H.O. 1928	[2]$614,806
Jackson Street	Joliet	Double Leaf Rolling Lift	150′	47′	24′-0″	2-6′-0″	165′-6″	2-24′-4″ 2-57′-0″ 1-51′-8″	None	H20	A.A.S.H.O. 1928	178,246
Cass Street	Joliet	Double Leaf Rolling Lift	150′	47′	44′-0″	2-7′-5″	174′-0″	2-24′- 4″ 1-30′-11″ 1-30′- 2″	None	H20 2-45 Ton Street Cars	A.A.S.H.O. 1928	288,028
Van Buren St. (Temp.)	Joliet	Trestle	No Navi-gation	No Navi-gation	20′-6″	1-6′-0″	9 Span Steel Trestle 295′-0″ lg.			H20 2-35 Ton Street Cars	A.A.S.H.O. 1928	34,237
Jefferson Street	Joliet	Double Leaf Rolling Lift	150′	47′	40′-0″	2-9′-5″	168′-0″	2-24′-4″ 2-54′-0″	None	H20 4-45 Ton Street Cars	A.A.S.H.O. 1928	289,473
McDonough Street	Joliet	Double Leaf Rolling Lift	150′	47′	22′-6″	2-6′-0″	174′-0″	2-24′- 4″ 1-43′-10″ 1-82′- 4″ 1-51′-10″	None	H20 1-42 Ton Locomotive and2-75 Ton Freight Cars	A.A.S.H.O. 1928	262,745
Brandon Road	Joliet	Double Leaf Trunnion Bascule	110′	55′	22′-0″	None	151′-0″	2-23′-6″	None	H15	A.A.S.H.O. 1928	80,034
Smiths Highway	Near Channahan	High Level Fixed	350′	47′	22′-0″	None	366′-0″	2-211′-10″	1-229′-3″ 1-167′-7″	H15	A.A.S.H.O. 1928	[3]197,885
Morris	Morris	High Level Fixed	350′	49′-9″	22′-0″	None	362′-10″	4-200′-0″	2-142′-0″	H15	[4]A.A.S.H.O. 1931	280,220
Seneca	Seneca	High Level Fixed	350′	47′	22′-0″	None	362′-10″	3-200′-0″	1-298′-6″ 1-238′-6″	H15	[4]A.A.S.H.O. 1931	168,729

Marseilles Canal	Marseilles	High Level Fixed	225′	47′	18′-0″	None	236′-0″	None	1-315′-0″ [5]1-354′-4″	H15	A.A.S.H.O. 1928	81,731
Illinois River	Marseilles	High Level Fixed	No Navigation	No Navigation	18′-0″	None	236′-2″	2-236′-2″	1-110′-0″	H15	A.A.S.H.O. 1928	107,886
Hilliard	Ottawa	High Level Fixed	484′	47′	24′-0″	2-5′-0″	500′-0″	2-252′-10″	1-70′-0″	H20	A.A.S.H.O. 1928	372,720
Total												$2,956,740

The Morris and Seneca Bridges were designed and built by the Division of Highways.
The Temporary Bridge at Joliet was removed.

[1] Exclusive of Administration, Engineering and Property Damages.

[2] Includes $92,503 for Street Approaches.

[3] Includes $13,000 for Approach Fill.

[4] Using Live Load unit stresses throughout and disregarding provision for 100% increase of Live Load.

[5] Timber Trestle leading to Marseilles Lock.

NUMBER OF BRIDGE OPENINGS FROM JULY 1, 1934 TO JUNE 30, 1935

Month	Name of Bridge										
	Jackson St., Joliet	Cass St., Joliet	Jefferson St., Joliet	McDonough St., Joliet	Brandon Rd.	Utica	LaSalle	Pekin	Havana	Florence	Hardin
July, 1934	155	140	139	134	55	27	29	56	71	59	54
August	80	62	63	66	56	31	32	50	65	60	65
September	75	59	58	53	57	28	33	25	44	44	37
October	54	48	40	53	55	30	37	29	41	29	24
November	35	32	35	35	46	24	28	32	39	29	25
December	21	23	23	25	30	8	12	13	17	22	13
January, 1935	166	168	169	170	25	2	4	5	1	5	5
February	250	250	249	251	20	----------	4	5	5	5	3
March	193	192	193	193	49	19	22	33	26	24	22
April	54	48	51	47	41	19	33	31	21	25	20
May	73	53	54	54	80	23	32	41	48	35	33
June	62	64	48	65	54	27	47	38	76	39	37
Total	1,218	1,139	1,122	1,146	568	238	313	358	454	376	338

BUREAU OF RIVERS AND LAKES CONTROL.

W. G. POTTER, *Chief.*

NORTHERN DISTRICT.

Mr. Walter M. Smith, Jr., District Engineer, with office in Chicago.

Inspection duties were carried on during the year by one chief investigator and two inspectors on the Fox River; one inspector on the Chicago, DesPlaines and Calumet rivers; one on the Kankakee and Vermilion rivers; one on Lake Michigan and two on the Rock River; their duties being to prevent obstructions and encroachments; to report on complaints; to observe conditions during both high and low water times and to educate the people in regard to the proper use to be made of the many beautiful streams of the State.

In addition to supervising the work of the investigators and inspectors, many surveys and problems were cared for by the district engineer after consultations with the chief of the bureau and the chief engineer of the division. Among these, surveys were made of the dams in the Fox River with a view toward their rehabilitation and possible raising of their crest elevations. Surveys were made of tentative dam sites for two additional dams in the Fox River, one between St. Charles and South Elgin and one below Algonquin.

Surveys were made and engineering assistance was given in regard to the Federal Transient Service Camp at Glenwood Park and to other projects of that service. Surveys were also made in connection with applications for permits by the State Division of Highways for bridges over the DesPlaines River at Gurnee and Wadsworth and over the Kankakee River at Momence.

A thorough study and report was also made as to the possibilities of improving the DesPlaines River from the Hoffman dam at Riverside to the Wisconsin state line. This report was developed and compiled upon instructions of Director Kingery for use in connection with plans of the DesPlaines River Improvement Committee.

SOUTHERN DISTRICT.

Mr. E. D. Dewey, District Engineer, with office at Carbondale.

On July 1, 1934, inspectors were appointed as follows: one to cover the Kaskaskia River and its tributaries; one on the Little Wabash River and tributaries; one on the Saline and Ohio rivers; one on the Big Muddy River and tributaries; and one on the Embarrass River; all with duties similar to the inspectors of the Northern District.

On the last mentioned district, the Embarrass, the inspector in addition to his regular duties, looked after the work being done under the Flood Relief on that river until its completion in September, 1934. After that date, this district was transferred to the Central District and under the Springfield Office.

Among the work accomplished by the Southern District was the removal of three old iron bridges which had fallen into the South Fork of the Saline River; removal of a sunken barge in the Mississippi River near the intake for water supply of Menard State Prison at Chester; complaint of city of Witt in regard to Work Relief Project on Kenney Creek was investigated and satisfactorily settled; investigation of cause of flooding of State Highway Route 147 in Johnson County with recommendation to the Highway Division for remedying the condition; investigation of site for proposed dam and lake at Giant City State Park; investigation and report on proposed new channel for Big Creek in Pulaski County; investigation for proposed irrigation dam for orchards in Johnson County; investigation of complaint by pollution from sewage treatment plant in small stream at Effingham.

The District Engineer also attended and reported on various public meetings in regard to the Flood Relief Bill in Congress; investigated and reported on flooding of highway and stores in city of Vienna; inspected all levees along the Mississippi River from Thebes to East St. Louis prior to and during the high waters of the spring of 1935 and the failure of the Herrin dam in June, 1935.

WORK RELIEF PROJECTS.

Two projects under Work Relief were started but not completed due to the stopping of this form of relief by the Federal Government. One project was for clearing and cleaning Cache River from Saratoga, Union County to the Johnson County line. About five miles was completed out of the total proposed distance of 15 miles. The other project was the clearing and cleaning of Dutch Creek for eight miles upstream from its mouth. Of this, about two miles was completed.

TRANSIENT RELIEF CAMPS.

Much assistance was rendered by the District Engineer in the location of work camps for the relief of transient. Service labor at the shelters at Cairo and East St. Louis. One camp was proposed near Carlyle, Clinton County, but after obtaining the land and arranging the program of work, on the Kaskaskia River, it was abandoned.

Three camps are proposed on the Cache River watershed, each with a capacity of 500 men. One, at Ullin, Pulaski County, has already been partially constructed. The sites for one at Cache, Alexander County and the third at Karnak have been selected but the camps have not yet been constructed.

CENTRAL DISTRICT AND MAIN OFFICE OF BUREAU.

W. G. POTTER, *Chief,* Located at Springfield.

On or soon after July 1, 1934, five inspectors were appointed covering the Illinois River below LaSalle, the Mississippi and all other streams in the central third of the State with duties similar to other inspectors, and similar work was done by them in guarding the streams from obstructions and encroachments.

Weather Conditions.

The general drouth of 1933 continued until September, 1934 but in that month the rainfall was very excessive throughout the State, the general average being 6.64 inches while at several points the total was over 9 inches during the month. This proved to be the wettest September on record excepting in 1911 and 1926. Because of this many of the crops were badly damaged. In the early part of 1935, climaxing in June, the rainfall was also very excessive, causing many farmers to replant their crops. The heavy rains for May and June were largely in the shape of local cloud-bursts in various parts of the State, but each causing floods and much damage in its region.

In May, 1935, the Illinois, Ohio and Wabash rivers were all above flood stage as well as many of the smaller streams. The rainfall for the State averaged 7.78 inches, more than double the normal for the month.

In June also the rainfall was very heavy, averaging 5.99 inches over the State. In the south an extremely heavy rain occurred, showing at Carbondale 5.77 inches and at New Burnside 6.22 inches in one day. In consequence of this storm, the water supply dam at Herrin was overtopped and destroyed. Also at Gardner, Grundy County considerable damage was done by the flooding of the town because of insufficient drainage. Similar storms caused much damage to crops in the Illinois River Valley and other regions.

Federal Transient Service Work.

Two camps were proposed for this work on the Sangamon River. The object of one was to remove and clear the accumulated jam of logs, sand bars and debris that extends over much of the first four miles of the river above its mouth.

Nothing was done on this project during the year except to locate the site of the camp.

The other project on the Sangamon was for the purpose of removing the trees and clearing the channel near Kilbourne. Some of the buildings for the camp were constructed but no other work was done previous to June 30th.

Flood Relief Work.

The work on flood relief consisted mostly of completion of contracts started in previous years and included the following:

Embarrass River.

This contract, for a new channel for the river between Lawrenceville and its mouth, was started in 1932 but was held up by injunction.

After considerable negotiations work was allowed to proceed in 1933 and was completed in September, 1934. This work was done under H. B. 697 reappropriated, and the cost of work from July 1, 1934 to completion was $12,804.44, the total cost from beginning being $45,525.00.

Valley City Drainage and Levee District.

In consequence of levee reconstruction by the U. S. War Department, considerable work was necessary in installing two new discharge pipes through the levee and reconditioning the pump station. This was done under H. B. 916 reappropriated, at a cost of $10,195.05.

Clear Lake Special D. & L. District.

As emergency work to save the levee of this district on the Sangamon River, repairs were made amounting to $1,100.00, also under H. B. 916 reappropriated.

Permits issued during the year ending June 30, 1935:

For bridges	57
Dams	10
Dredging	21
Sewer outfalls	9
Pipe lines and cables	11
Docks and piers	39
Retaining walls	15
Miscellaneous	18
Total formal permits	180
Informal permits on weekly list to State Highway Division	316
Total permits issued	496

This compares rather unfavorably with the previous year when a total of 547 permits were issued, being 51 more than for the present year.

Routine office work consisting of the increasing correspondence in regard to permit applications, complaints received of flood damage, or other troubles, was taken care of in the Springfield office, in addition to the frequent trips of the Chief to consult with the District Engineers and advise with them as to the problems before them.

HISTORY OF AGRICULTURAL DRAINAGE IN ILLINOIS.

By W. G. POTTER, *Chief Bureau of Rivers and Lakes Control,*
Division of Waterways, State of Illinois.

[Paper read at 50th Anniversary Celebration of Illinois Society of Engineers, January, 1936.]

In the early days of geological history the future Illinois was invaded several times by glaciers coming down from the North, gouging out huge holes as they advanced. In their retreat, these glaciers dropped the soil and boulders, thus partially filling the holes but leaving in their wake many depressions. The melting ice formed great river valleys such as the Rock, Kaskaskia and Embarrass. Largest of these was the Illinois valley from four to ten miles wide and in places several hundred feet deeper than at present, caused by the waters of the Great Lakes flowing to the south and west.

These valleys through ages unknown, have gradually filled with material carried by the streams until the original deep valleys have become shallower and broader. With the diminishing water caused by the lowering of the level of the lakes until their western outlet was finally cut off, nature has, especially in the Illinois River Valley, changed that river from a great broad stream to a much smaller, narrower stream with a succession of swamps and lakes covering much of the original valley. Likewise other rivers have deteriorated into comparatively small streams with large expanses of swamp areas.

Not only is this true of the actual river valleys, but in much of the higher areas depressions were left by the glaciers which naturally filled with waters at each rain, thus expanding the swamp conditions.

Also in these rivers much detritus was brought down from erosion of the hills and uplands which in each receding high water was deposited on the banks. Thus these banks became higher than the lands further away from the streams and new swamps were formed behind the banks.

At the time of the beginning of settlement in Illinois and until 1860 to 1870, it is estimated that at least 35 per cent of the area of Illinois was swamp land. Because of this, "chills and fever," now called malaria, and typhoid were the chief causes of illness of the settler. Vast hordes of mosquitoes from these low grounds added to their ills. Under such conditions, life was not easy for the increasing number of inhabitants.

Along about 1870, individual farmers began to lay tile drains and dig open ditches to rid themselves of these swamps and to turn the rich ground into cultivatable land. Others, seeing this to be successful, followed this plan also until many miles of tile drains had been laid. However, they were on individual farms. They were laid roughly, unsystematically, of very small size. They in many cases were laid in a haphazard way without a semblance of regular grade or skill and even occasionally laid on an up grade.

In 1871, seeing the advantage and necessity of drainage being undertaken on a larger scale to cover and redeem swamp areas of more than one ownership, the legislature passed a bill for drainage by districts. This was finally declared unconstitutional.

In 1878 an amendment was made to the State constitution giving the legislature right to pass laws permitting owners of lands to construct drains, ditches and levees for agriculture, sanitary and mining purposes and to keep them in repair by special assessment on the property benefitted.

Following this, in 1879, the first general law for the formation of drainage districts was passed. This was known as "The Levee and Drainage Act," and under it and its many amendments passed in later days, most of the drainage districts of the State have been organized.

In 1885 the Farm Drainage Act was passed, allowing districts to be organized under supervision of the Township Highway Commissioners. This Act has been much used for small districts and for those in which levees are not needed.

Discussion of these laws will be left to the paper of Mr. Harman.

With the organizations of the many districts under these two laws, the construction of drainage systems became more of a matter of study and planning. Where previously the digging of ditches or the laying of tile was done as above stated in a happy-go-lucky, haphazard way, the Surveyor and Engineer now began to enter the picture. Engineers were hired, (and occasionally paid) for planning the systems and for carrying out their plans.

Man power and team power became too slow and costly and machines began to take their place in the sun. Steam dredges, and drag line machines came into use, followed later by oil, electric and Diesel power machines.

Not until 1898 were pumps put to use in throwing the water from the interior of levee districts over the levee. The first case of pumping was in a district in Whiteside County, the Engineer being Mr. Dan Mead, an ex-president and now an honorary member of this society. The area of this district was about 8,500 acres and water was also received from some 7,000 acres of highland adjoining. Automatic gates were also installed in this district to prevent back water from the Mississippi entering the district at high water times, also allowing gravity flow to the river during low water times in the river.

Returning to the laying of tile drains, we find in the report of the Drainage Committee of the I. S. E. in 1900 that in 1896, 1,400 miles of pipe were laid; in 1897, 1,600 miles; in 1898, 1,800 miles, and in 1899, 2,100 miles with an estimated total to 1,900 of 135,000 miles of tile laid in Illinois with probably 15 per cent more of which they could get no information.

The high era of work on drainage and levee districts was between 1890 and 1920 tapering off slowly to about 1925.

In 1929, quoting from Bulletin 42 of the State Geological Survey compiled by our worthy President, Prof. Pickels, there were 1,170 districts organized and 38 districts in process of organization.

These districts with the area of the flood planes of the many rivers comprise a total of about 6,566,300 acres or 22 per cent of the entire area of the State, and much of which is the best agricultural land in the State.

Turning now from the organization of districts to the maintenance, we have a more dismal picture before us.

By far the greater part of the levee districts along the larger streams like the Mississippi, the Illinois, Embarrass and Sangamon were organized previous to the time when the State was exercising any jurisdiction over the location of the levees. Consequently, in a very usual and human way, each district wished to retain all the fertile land possible inside the levees, and therefore, those levees were built close to and following the windings of the river bank. Across the river the neighboring district did the same.

The result is that the river which previously had a wide flood plane, is closely confined between levees, and when high waters come, the flood crest rises and over tops which ever levee happens to be the lower. As an example of this, the Illinois River near Beardstown, with a flood plane formerly several miles wide, is now confined between levees less than 1,200 feet wide. In 1922, 23 districts on the Illinois alone were flooded in this way, causing damage to crops, lands and property in the millions of dollars.

Another error in the construction of districts is that districts would be organized and would construct miles of tile or open ditch to hasten the flow of surface and ground water to the river, build high levees to confine the stream between banks, and straighten the stream with possible long cutoffs, and then dump all of this increased flow on an unprotected and unimproved region further down stream.

The Division of Waterways, which now has jurisdiction over all streams is at present working on a long time program for improvement of all major streams of the State in which the improvement will extend from the mouth upwards instead of the patchwork custom heretofore followed. This program will include straightening the stream by cutting out bad bends, setting back levees where necessary, raising levees to a standard height, and removing obstructions, all based on a studied plan of proper flood capacity width at all points. Such plans were made on several of the streams some twenty-five years ago, but due to lack of jurisdiction, organization of districts was not made under permit at that time and levees were built by the districts without State supervision. Permits began to be required about 1915 but requirements have been becoming more stringent each year.

Since 1933, the Division of Waterways has maintained a force of engineers and inspectors over the entire State through the Bureau of Rivers and Lakes Control, which under the Chief Engineer of the Division, at present consists of a Chief of Bureau, located at Springfield, three District Engineers with offices at Chicago, Springfield and Carbondale, two Assistant Engineers and 19 inspectors and investigators, their duties being the care and improvement of the rivers and lakes of the State, the protection from such disastrous floods as have occurred in recent years; the conservation of water to alleviate such drouths as occurred in 1934, and to formulate plans for future developments of our inland waters for the best interests of the people of the State.

The period of greatest growth of drainage districts occurred from 1890 to 1920 approximately, and since then the movement has been much retarded, by the floods of 1922 to 1927 and 1935, by the drouth of 1934 and by the general depression of the last few years. The combination of these, with the great lowering of land values, has brought many of the districts to complete bankruptcy and others to the verge of it; so that at present it is exceedingly difficult to make assessments to cover needed repairs or even to pay for the ordinary maintenance expenses.

In the opinion of the writer there are a number of drainage districts along the Illinois River, and perhaps elsewhere which should be abandoned and opened up again to the river either for game or fish preserves, or else equipped with proper openings and used for flood relief for the benefit and protection of the rest of the valley.

One district of the kind is already being prepared for that use. The Chautauqua Drainage and Levee District, located above and across the river from Havana, has been purchased by the Biological Survey of the U. S. Department of Agriculture for use as a fish and game preserve and also to some extent for flood relief. It is their plan to maintain from 3 to 5 feet of water in the district at all times. Also to rebuild the levees with a concrete spillway near the upper end, so that as the highwater nears its crest, it will spill over and fill the district. A gate at the lower end will allow the water to rejoin the river after the crest has been passed.

To show the extent to which it has become necessary to resort to pumping the drainage water over the levees, it is stated that in 1930 about 35 levee districts on the Mississippi River above St. Louis were using pumps, and about 40 on the Illinois River between Grafton and Peoria.

Approximately 50 per cent of these are using electric power, 35 per cent steam, and the remainder oil power.

I am told that in the last 20 years, no new steam plants have been installed for pumping purposes.

In the early days of pumping for drainage districts, it was usually considered about the limit of economy to construct the plants with a maximum capacity of removing a depth of ¼ inch of water over the entire watershed per 24 hours of service.

Later installations increase that to ⅜ or even ½ inch per 24 hours in order to relieve the flooded districts in as short a time as is practicable.

In concluding this paper, a few words in regard to the Swamp Lands Act may be of interest.

In view of the very large amount of lands in the country which by reason of being periodically or habitually covered with water and thereby rendered unfit for agriculture, the Congress of the United States in 1850 passed what is known as the Swamp Lands Act. This Act originally was intended for the State of Arkansas only and related to the swamp lands overflowed by the Mississippi River and its tributaries in that State. However, by the efforts of the late Senator Stephen A. Douglas, the bill was amended to include all government lands which were too wet for cultivation without artificial drainage.

In 1855 the State of Illinois granted all such lands which were received from the Federal Government to the various Counties to sell or dispose of as they saw fit.

However, between 1850 and 1855 the U. S. Land Office had sold or granted many tracts of land to individuals.

Therefore, in 1855 and 1857 other Acts were passed by Congress which confirmed the title of lands already patented or sold by the Federal Government, and the State was to be reimbursed either in cash or in other lands for any land sold by the U. S. Land Office. In spite of this Act, that office continued to sell swamp lands, and from this have arisen many conflicts as to title. Many claims for indemnity remained unadjusted in 1877 according to Governor Beveridge, made even more difficult because all public lands by that time had been entered.

In 1891, the latest date of which the writer of this paper has found record, settlements had been made for indemnities to the amount of $441,376.17 in cash (the equivalent of 353,104 acres at $1.25 per acre) and land indemnity of 101,984.90 acres.

In consequence of this difficulty between Federal Government, State and Counties, many of the lands in the State are still under a cloud in their titles in spite of the fact that because of the drainage operations by their owners, they are now among the most productive areas of the State.

BUREAU OF WATER TERMINAL.

T. B. Casey, *Terminal Engineer*

Upon the completion of The Illinois Waterway the need of adequate transfer facilities at the Chicago terminus for the exchange of package and bulk freight was obvious. With this in mind the Fifty-eighth General Assembly of the State of Illinois gave authority to the Department of Public Works and Buildings, Division of Waterways, to improve for water terminal purposes State owned land acquired through a transfer of property with the Atchison, Topeka and Santa Fe Railway and the Illinois Central Railroad with money furnished by the railroad companies as a part of the consideration of the transfer of land. The location of the site was on the west side of the Santa Fe Slip which is situated on the West Fork of the South Branch of the Chicago River between Ashland and Damen Avenues. This site has the advantage of being at the northern end of the Sanitary and Ship Canal, and close to a rich manufacturing center, the central manufacturing district.

Accordingly, construction was started on the terminal in May 1934 and completed in June 1935. The work was done under four separate contracts because of the varied nature of the work involved. The terminal consists of separate units for handling both bulk and package freight. Provisions were made for extending the package freight facilities so that if the increase in business is sufficient this site can be used for package freight and bulk freight handled on other locations of State property. Railroad connections serving the terminal are installed in accordance with an agreement with Chicago River and Indiana Railroad, a belt line railroad, with the Atchison, Topeka and Santa Fe Railway participating in side track rights.

The package freight unit consists of a one-story dock house, 85 feet wide and 198 feet long, with an additional storage space provided by a wing 50 feet wide and 75 feet long at the south end. In a second story portion, over all the wing, the office is located. While the office is admittedly larger than the present size terminal warrants, it was designed to take care of future needs as the additional cost of providing the space was negligible compared to the cost of providing additions as the demands for additional space would arise. At the north end of the dock house an open platform 72 feet long along the dock is provided for the direct loading from barge to railroad. Facilities to service the equipment which will be used in the operation of the terminal are available in a temporary repair shop constructed at the north end of the open platform. Nine movable ramps were located along the wharf line, six in the building and three in the open platform, for the purpose of giving access from barges to dock. These ramps are spaced to fit the hatches on the standard barges and each is operated by a chain hoist so that for any differences in river elevations and for any differences in draft between the loaded and emptied condition of the barges the ramps can be lowered or raised accordingly. At the north end of the dock house a truck loading concourse and platform is located. Nine doors are constructed along the north end of the building for access of freight which is to be transferred from truck to barge or railroad or vice versa. With this layout, it can readily be seen that quick modern facilities are provided for the transfer of package freight from any one of the combinations of transfers from barge, railroad or truck, with temporary storage space provided for such freight as cannot be conveniently transferred at the time of unloading. The capacity of the present terminal is estimated as a maximum of 250,000 tons of freight per annum.

North of the package freight unit space was left for the transfer of bulk freight. The two tracks which are used for the dock house were extended along the wharf line to furnish means of transferring bulk freight direct from barge to rail. Room was left between the warf line and the track for the operation of caterpillar cranes which it is contemplated will be used in transferring materials. Sufficient area is also provided in this location for temporary storage of materials.

The wharf wall along the slip, on which the terminal is located, consisted of a timber sheet pile bulkhead which was in bad repair; consequently, that portion opposite the dock house and for a hundred feet north of it, or a total of 400 linear feet, was replaced. The new wharf wall was constructed of steel sheet piling and is designed with sufficient strength to allow the slip to be dredged down to twenty-one feet below normal river elevation. This will allow the slip to have the same depth of water as the Chicago River. The wharf wall is somewhat unique in having openings cut in the wall to accommodate the operations of the movable ramps. This type wall was selected not only for the strength provided but also because of its permanency and low cost of maintenance.

Approximately two miles of railroad were constructed to serve the terminal. Two main tracks adjacent to the building serve the facilities, while west of the dock house these service tracks are flanked by nine storage tracks which afford adequate space for storing empty cars and making up trains of loaded cars. By agreements between the State of Illinois and the railroads, the operators of the terminal are guaranteed uninterrupted belt line railroad service sufficient to take care of all their needs.

A large trapezoidal shaped trucking concourse is located at the south end of the building. In order to have the proper relation between the floor of the dock house and the trucking concourse, it was necessary to depress the concourse area. As a result, 500 linear feet of retaining walls were built and ramps provided for ingress and egress to this area. The entire area of the concourse is paved and properly drained so that access to the dock house is available in any extreme of weather.

The sum of Two Hundred Thousand Dollars ($200,000) was made available for this project. The financial statement listed below gives the disbursement of this money:

Contract Tla—Foundation piling and dock work	$ 26,315.01
Contract Tlb—Concrete substructures	59,653.53
Contract Tlc—Superstructure and appurtenances	74,360.00
Contract Tld—Excavation, grading and track work	30,996.51
A. T. & S. F. Ry. miscellaneous work	1,564.00
Engineering and miscellaneous	6,673.30
Balance in Water Terminal Fund	437.65
Total	$200,000.00

The contractors on the various contracts were as follows:

Contract Tla—Mackie, Thompson, Tamm, Inc., Chicago.
Contract Tlb—E. W. Sproul Construction Co., Chicago.
Contract Tlc—John E. Ericsson Co., Chicago.
Contract Tld—Thomas M. Madden Co., Chicago.

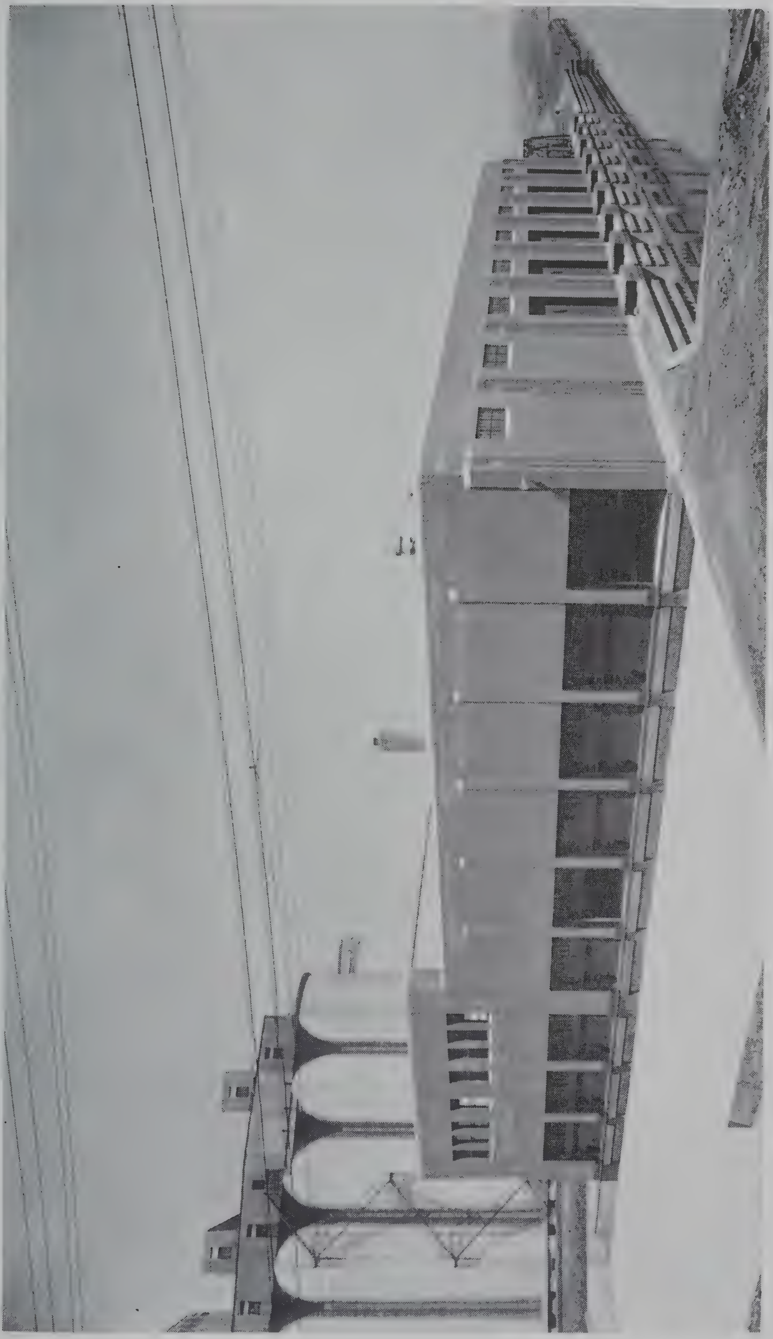


Figure No. 38. Barge Terminal on the Chicago River between Ashland and Damen Avenues, Chicago.

BUREAU OF ILLINOIS AND MICHIGAN CANAL.

JOHN F. NICHOLS, *Auditor.*

Collection of rentals was less than for the previous year due to economic conditions and discontinuance of the Interurban lines having leases of portions of the canal reserve. Efforts being made to collect all rentals in arrears and negotiations pending with lessees of canal property who have discontinued business and from whom arrear rentals are due.

Expenditures during the past year materially increased, due to salary and expenses of survey party who started February 1st, and for which $5,540.02 was expended for the five month period ending June 30th, also salary of special investigator for three months and salary of stenographer at the Division office for a six months period.

There was expended $1,139.03 for materials used in repairing and rehabilitation of three locktender houses.

There also was purchased, materials for minor repairs and new roofs on four locktender—towpath walkers houses, materials for waste gates and spillways, repair parts for Link-Belt Crane, paint for exterior of LaSalle locktender house, metal "No Dumping" signs, an electric calculating machine and new typewriter.

Six new leases made for strips of the canal reserve, three leases for bridges across the canal and lease for gas main across the canal at Seneca. The State secured a Quit Claim Deed from the occupant for a strip of canal reserve at Joliet (title to which was involved) and a lease made for it with the grantor.

Two old dilapidated locktender houses were appraised, sold and the houses demolished.

The Division of Highways constructed three new highway bridges across the canal, one at Justice, one at Brandon Road and one at Birds (West of Joliet).

The State furnished most of the materials and the Emergency Relief Commission furnished a portion and all the labor to repair, paint, redecorate and rehabilitate the locktender houses at Channahon, Jackson Street, Joliet, and 16th Street, Lockport, and the three houses are now in first class condition. The Relief Commission also furnished all the labor to construct a stone wall one hundred feet in length directly west of the Junction Lock at Brandon Road, removed abutments of old Birds Bridge and repaired and built up canal banks on both sides of the bridge, removed part of abutments of old Brandon Road Bridge, repaired, raised and built up the towpath from near 16th Street at Lockport to the Illinois Steel Company Coke plant and it is now in good condition and usable as a roadway; repaired, installed new roof and put in good condition the canal office garage and storage building.

On June 25th, during a heavy rain fall, one hundred feet of the towpath between Locks 11 and 12 were washed out and which the Buffalo Rock CCC have started to repair.

Exterior of Locktender house at LaSalle has been painted.

Metal "No Dumping" signs have been erected along the entire length of the canal. Locktender house at Lock 13 has been rewired, also one thousand feet of pipe installed running from a spring to supply running water to the Locktender house. To prevent encroachments, during the latter part of 1934 the Fox River Feeder was patrolled daily.

The Dredge Boat has been caulked and is now ready to be taken down the river near Bath for use by the Transient Relief.

From August 7th to October 31st, a Special Investigator was employed examining titles to property at Ottawa, also at Dayton and to index the court files used in connection with the canal court case in Section 36-39-13. He also investigated sewers emptying into canal at Lemont and Lockport and with the cooperation of the local officials, the practice was stopped.

The Chicago Barge Terminal near Damen Avenue was completed in June, 1935.

On January 31st, the files pertaining to the Maintenance of Navigation Illinois Rivers were sent to the Chief Engineer at Springfield.

On February 1st, survey party of six, including draftsmen, started a new survey of the entire Illinois and Michigan Canal.

A financial report of the canal follows:—

SUMMARY OF ILLINOIS AND MICHIGAN CANAL FUND.

July 1, 1934 to June 30, 1935.

Balance on hand July 1, 1934		$78,732.93
Expenditures	$34,033.94	
Receipts	13,257.99	
Expenditures over receipts		20,775.95
Balance on hand July 1, 1935		$57,956.98

DETAILED RECEIPTS.

Ninety foot strip and lots rentals	$ 6,648.94
Bridge lease rentals	1,525.00
Pole line lease rentals	1,123.46
Switch track lease rentals	1,550.00
Water pipe lease rentals	1,820.00
Bill board lease rentals	62.50
Gas main lease rentals	287.00
Terminal lease rentals	139.36
Certified copies	14.50
Sale of two old buildings	62.00
Miscellaneous	25.23
Total receipts	$13,257.99

DETAILED EXPENDITURES.

Salaries and wages	$27,660.78
Office expenses	1,549.83
Travel	1,999.68
Operation	456.32
Repairs	1,880.92
Equipment	486.41
Total expenditures	$34,033.94

THE FIVE CIVILIAN CONSERVATION CAMPS HAVE CONTINUED THEIR WORK
ALONG THE CANAL DURING THE PAST YEAR AND HAVE MADE
THE CANAL AND CANAL LANDS INTO A HIGHLY
PRESENTABLE CONDITION FOR WHICH
MUCH CREDIT IS DUE THEM.

Following is a list of part of the work accomplished by each of the camps.

Camp No. 1. *From Chicago City Limits to Stephen Street Bridge at Lemont.*

Constructed stone trail stairway fifteen feet high, three foot bridges across canal, one trail and one vehicle bridge, two stone masonry dams, three trailside shelters, one boat landing, two parking spaces and one picnic ground. This camp also planted and landscaped twenty four acres, built five miles of trails and seven miles of minor roads and general clean up all along the canal and eradication of poisonous plants.

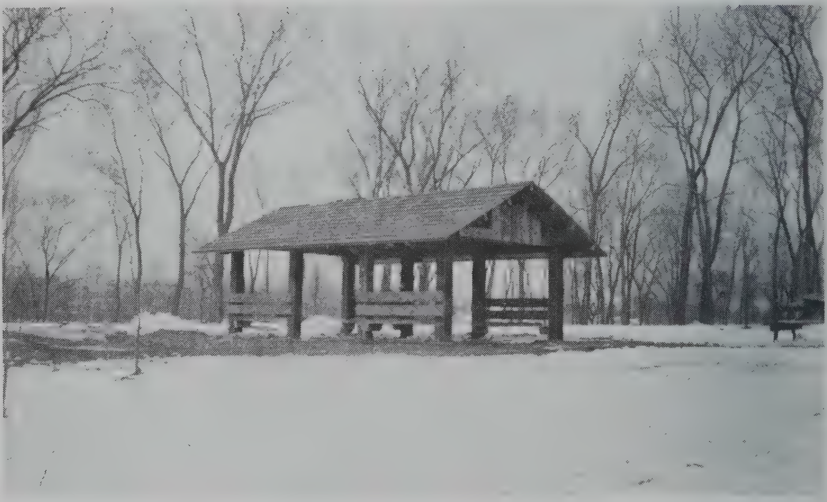


Figure No. 39. Picnic Shelter One Mile West of Willow Springs.

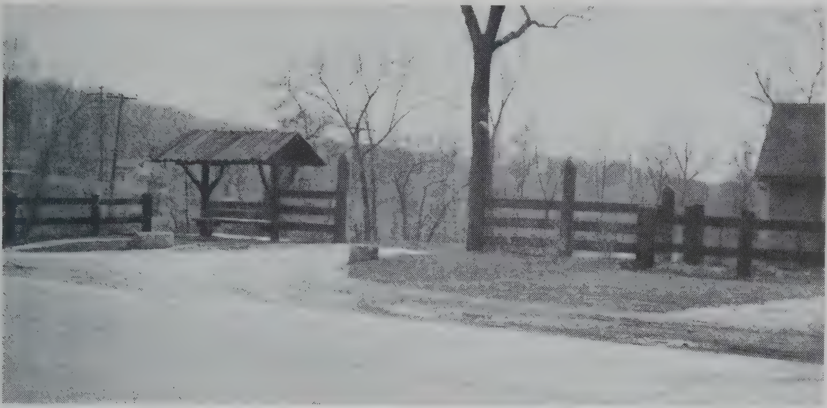


Figure No. 40. Entrance Gate leading to Canal Recreational Area from Willow Springs Road.

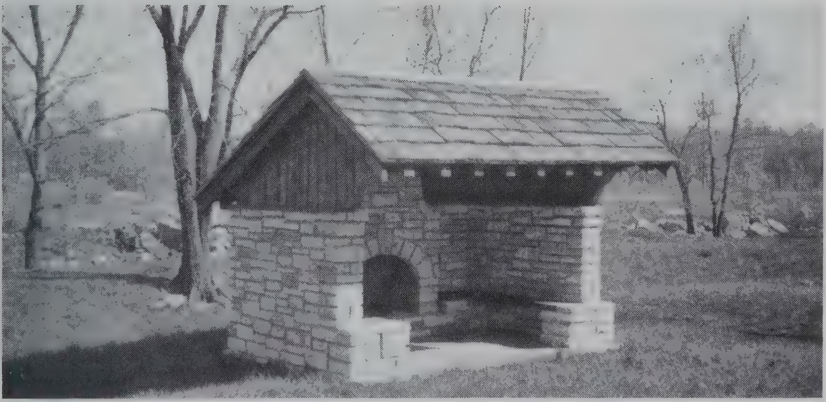


Figure No. 41. Stone Masonry Fireplace Shelter.

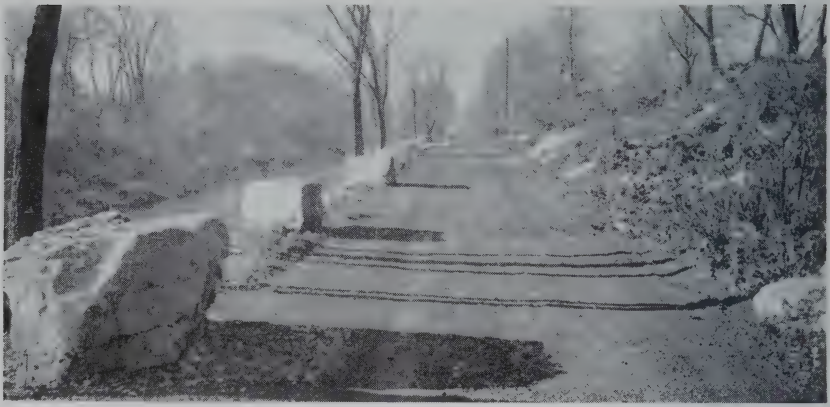


Figure No. 42. Cinder Road Along Bank of Canal.

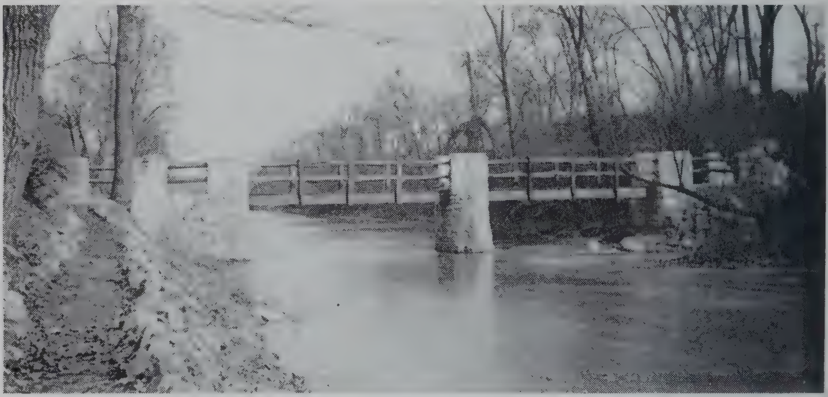


Figure No. 43. Stone Masonry Pier Foot Bridge.

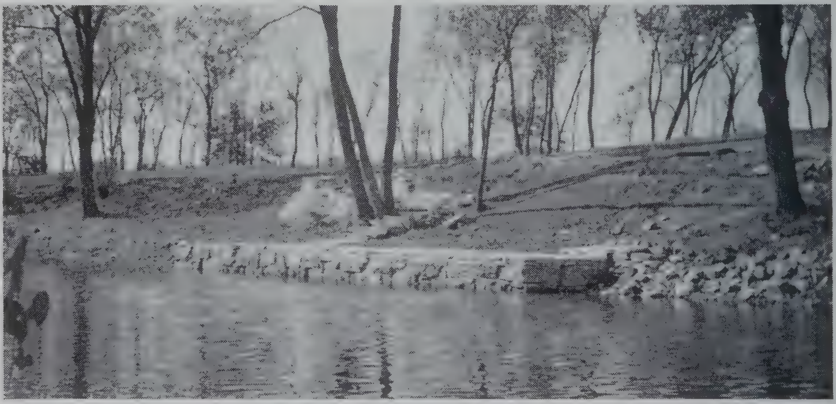


Figure No. 44. Stone Masonry Boat Landing.

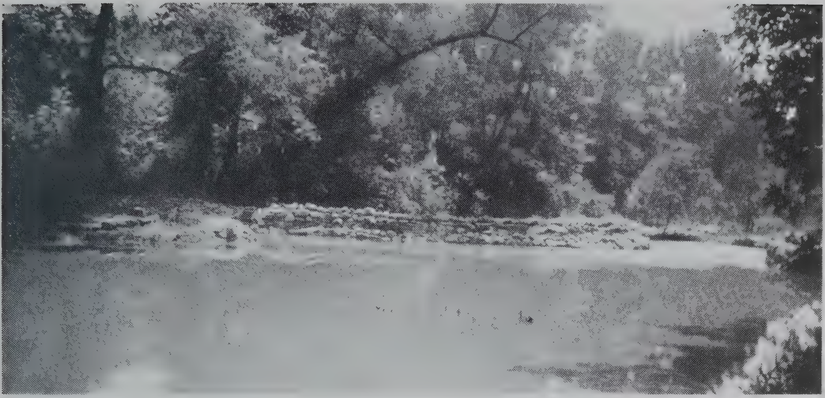


Figure No. 45. Rip Rap Canal Bank Protection Wall.

Camp No. 2. *From Stephen Street Bridge at Lemont to Brandon Road Bridge.*

Constructed three foot and one vehicle bridges, six fire places, four shelters, three tables with seats, built nine miles of park drive and five miles of foot paths along canal, landscaped and planted three miles, made eight acres in parking areas and treated one hundred acres for eradication of poison ivy and other noxious weeds.

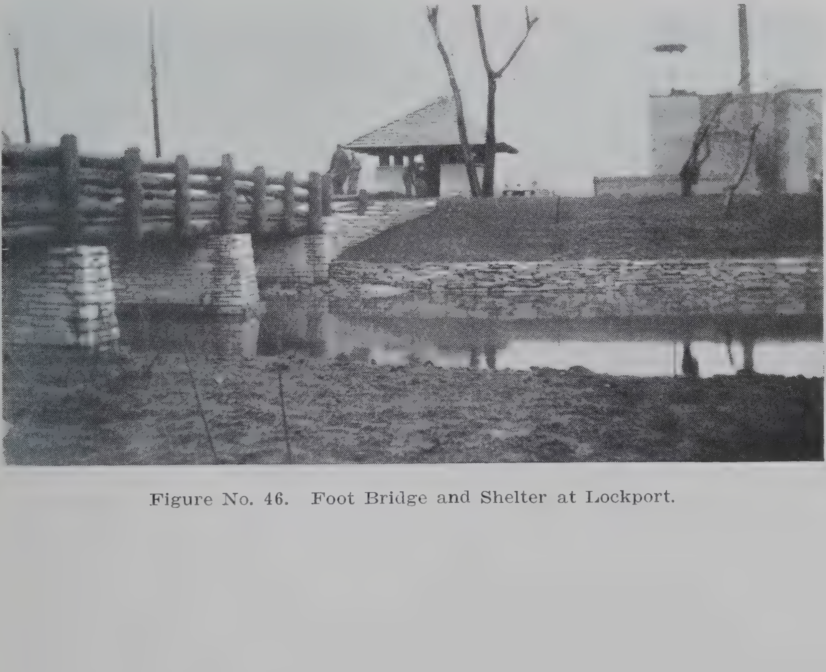


Figure No. 46. Foot Bridge and Shelter at Lockport.

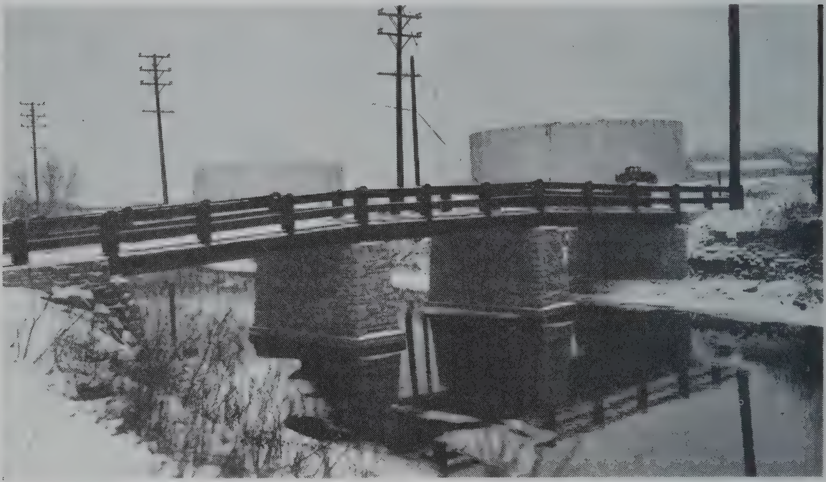


Figure No. 47. Vehicle Bridge, Second Street, Lockport.

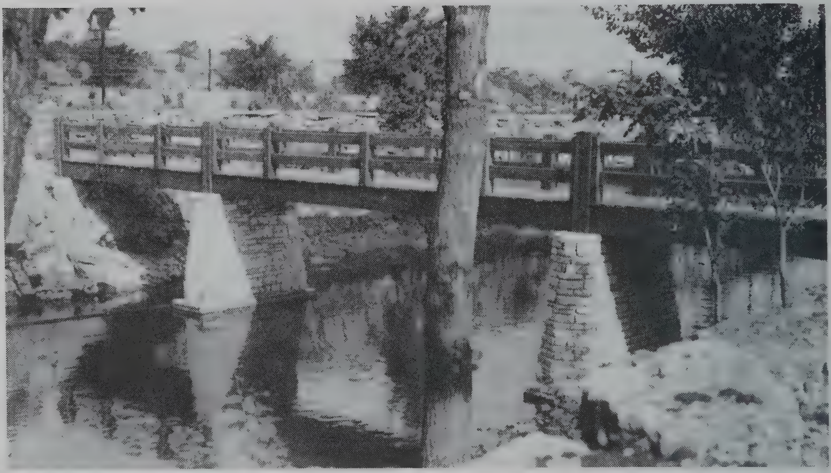


Figure No. 48. Foot Bridge, One-half Mile South of Romeo.

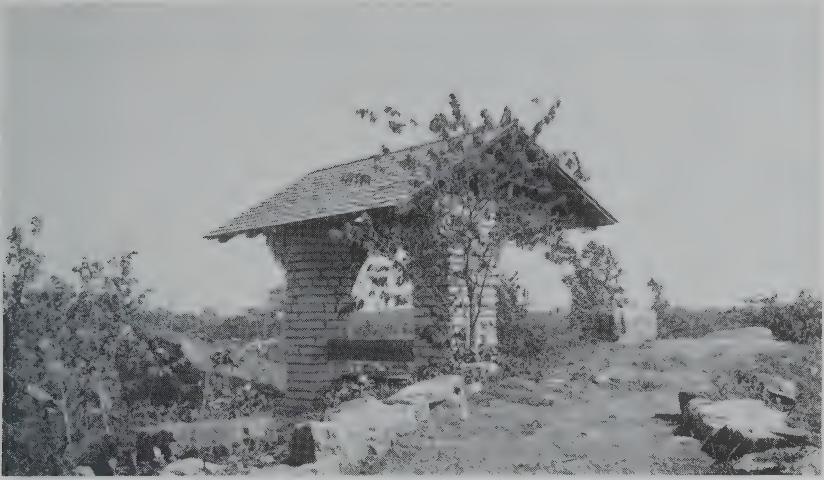


Figure No. 49. Trail side shelter One and One-half Miles South of Romeo.

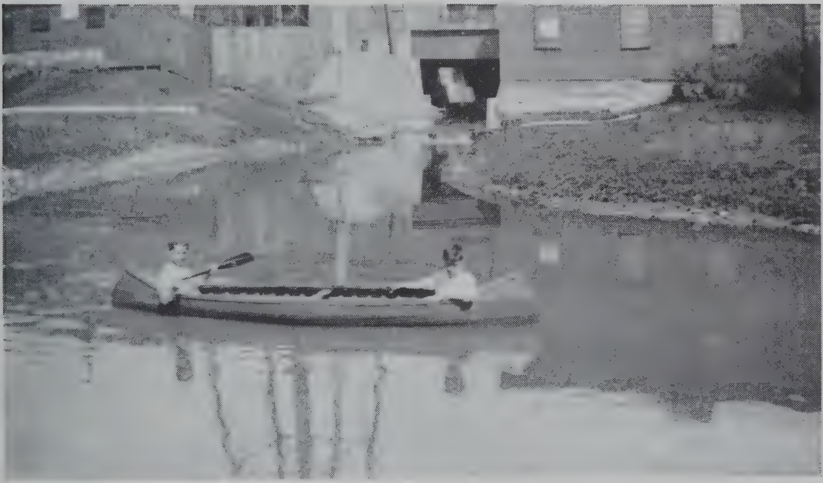


Figure No. 50. Canoeing in Canal at Lockport.

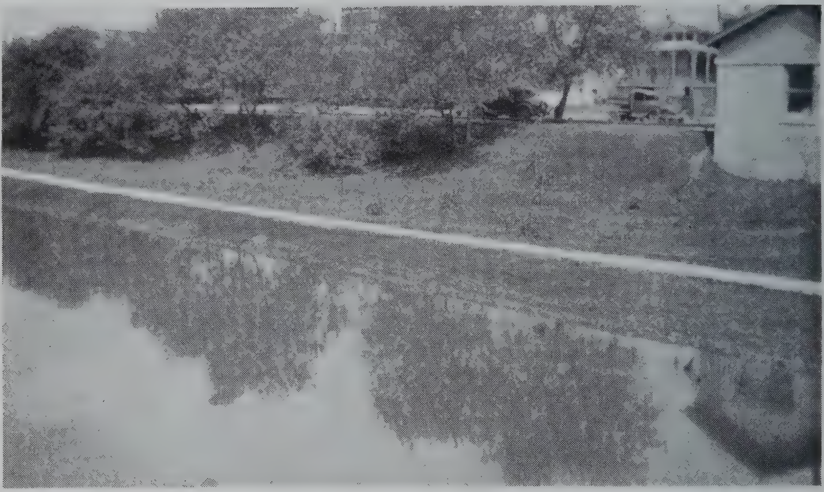


Figure No. 51. Foot Path Along Canal in Lockport.

Camp No. 3. *From Brandon Road to Three Miles West of Morris, Illinois.*

Constructed nine foot and two vehicle bridges across the canal, lowered two highway bridges, built fifty-two fire places along canal, one boat landing, thirty-two tables and nineteen seats, four trail shelters, one custodian house, one well drilled for drinking water, three swimming pools improved and made available for public use. Ten acres have been made into parking areas and one acre for camping and five acres developed for picnic grounds, over a mile of fence has been built. Seeded and sodded six acres, planted two acres, one fish rearing pond has been built, eradicated ten acres of poison plants and installed one thousand feet of water pipe.

Reconstruction of Channahon Dam and two spillways completed and from Channahon to end of the canal at Peru, the water in the Canal is now pure clean DuPage River water.

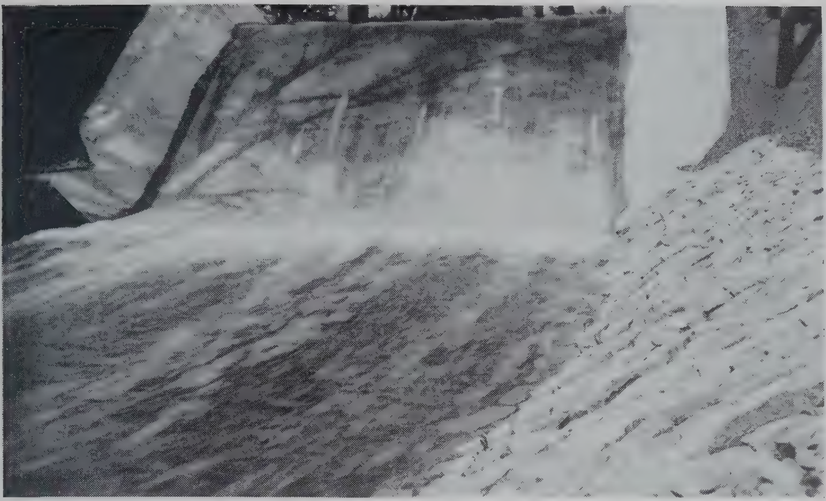


Figure No. 52. Spillway about Lock No. 6 at Channahon.

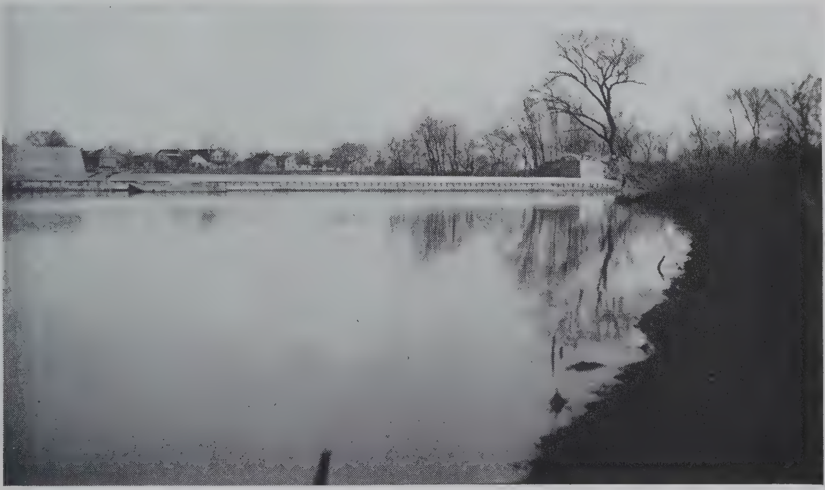


Figure No. 53. Reconstructed Dam on DuPage River between Locks 6 and 7, Channahon.

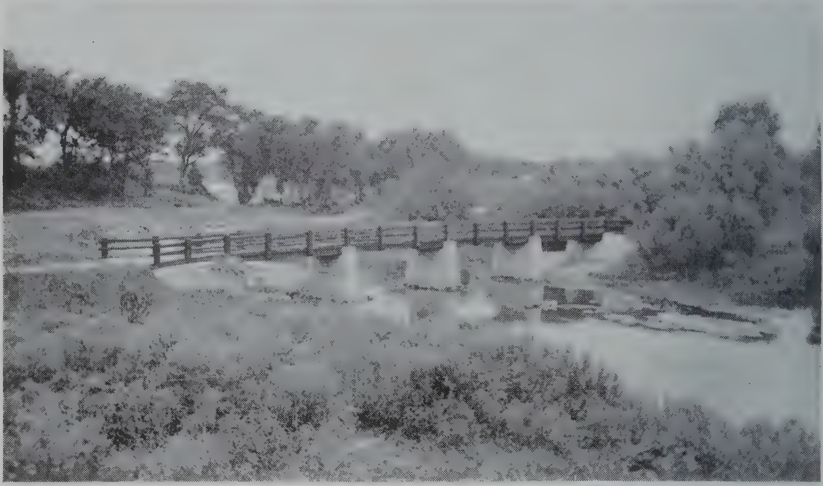


Figure No. 54. Foot Bridge in Canal Recreational Area at Channahon.

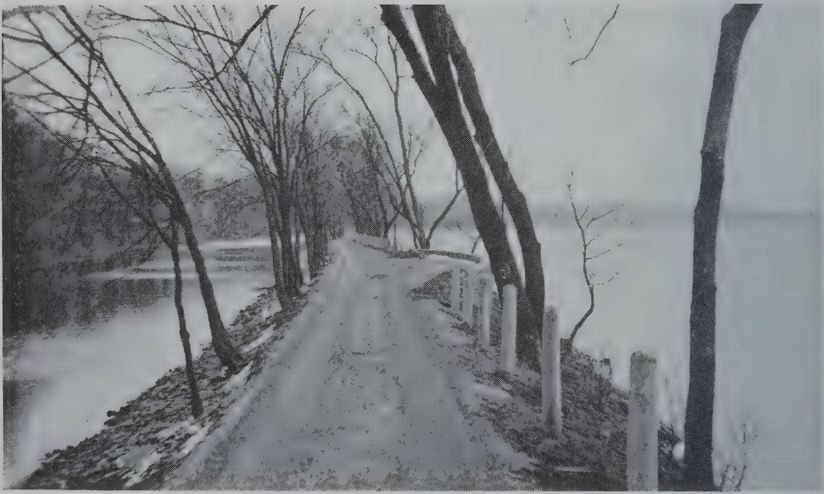


Figure No. 55. Roadway between Canal and River between Channahon and McKinley Woods.

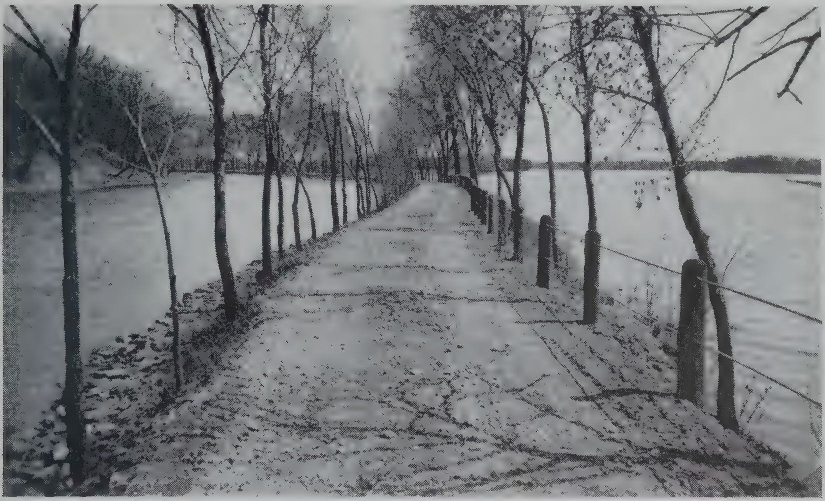


Figure No. 56. Roadway between Canal and River between Channahon and and McKinley Woods.

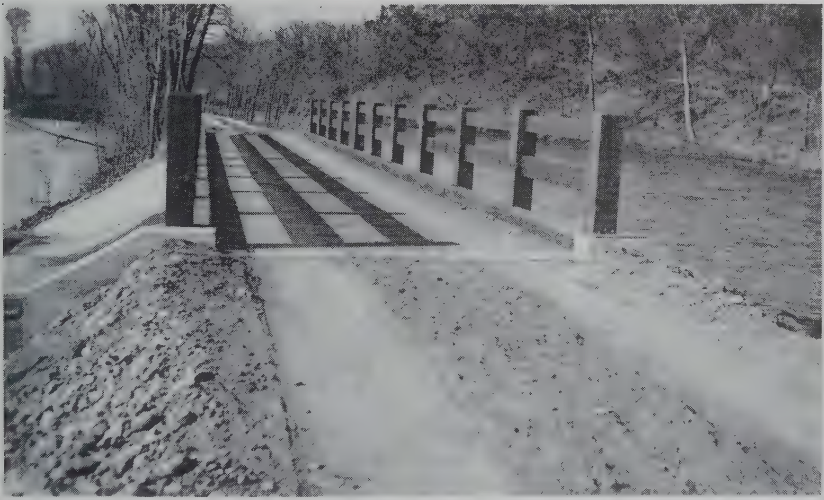


Figure No. 57. Spillway and Roadway Bridge in McKinley Woods.

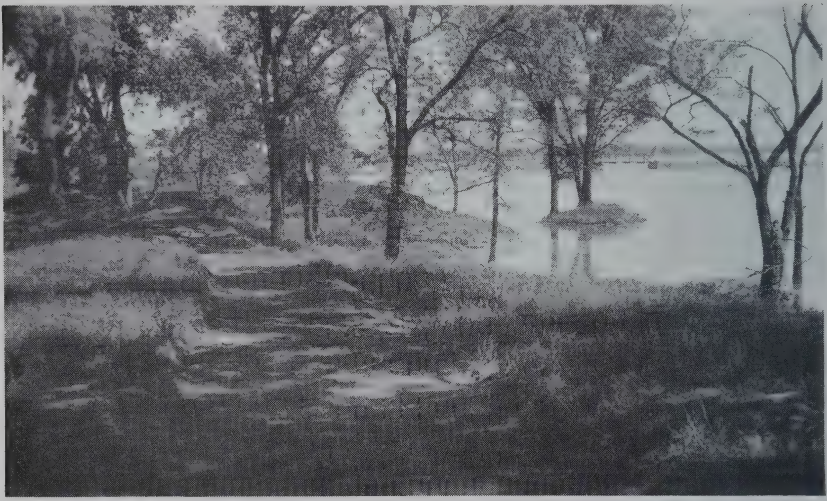


Figure No. 58. Picnic Area on South Bank of DesPlaines River Opposite McKinley Woods.

Camp No. 4. *From Three Miles West of Morris to Aqueduct Over Fox River at Ottawa.*

At Marseilles a parking area constructed with gravel surface and with two hundred seventeen feet of single log barrier, also five hundred feet of double log guard rail built at approaches to Chicago Street Bridge and along road past the spillway. Bridge five miles east of Seneca lowered and approaches graded, and Chicago Street Bridge lowered, its abutments repaired and approaches graded, 1,900 trees and 11,300 shrubs planted along the canal and approximately 50 per cent are alive. Canada thistles and other noxious weeds were eradicated.

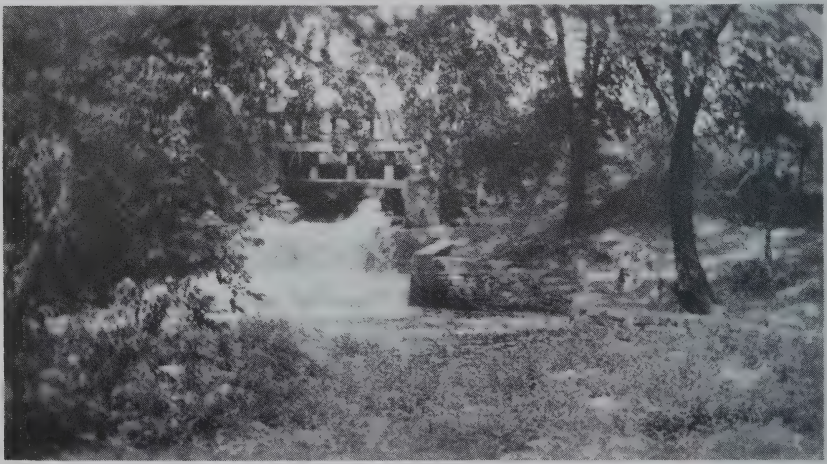


Figure No. 59. Spillway East of Lock 9 at Marseilles.

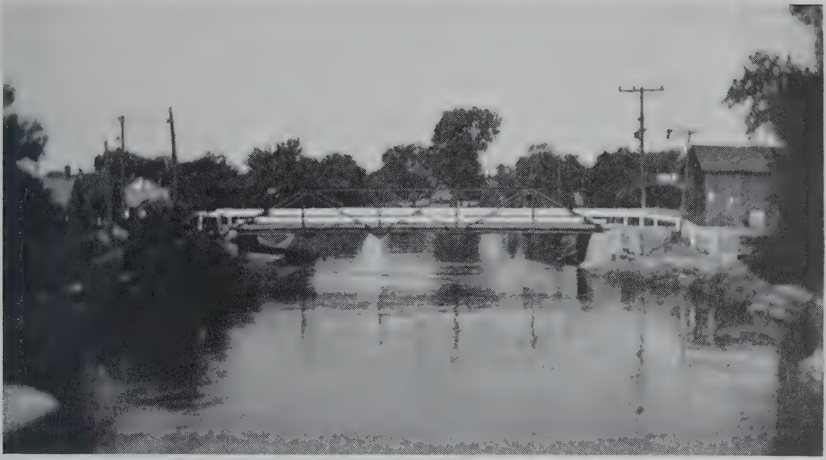


Figure No. 60. Bridge Lowered at Chicago Street, Marseilles.

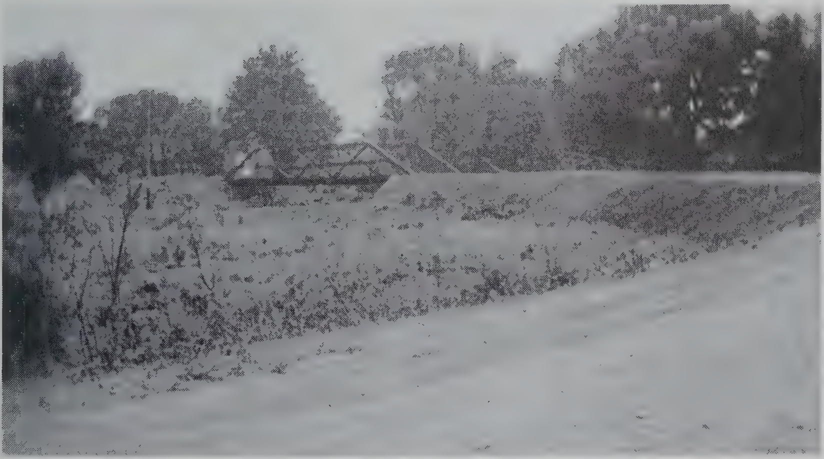


Figure No. 61. Bridge Lowered Five Miles East of Seneca.

Camp No. 5. *From Aqueduct Over Fox River at Ottawa to End of Canal at Peru.*

One-half mile of canal bank east of LaSalle has been reinforced with old railroad ties and approximately 10,000 cubic yards of backfill made, replacing that which had been washed out by high water in the Illinois River, the bank was then planted with willow to avoid further washing. Horse bridge built across Little Vermilion River, parallel to the Aqueduct at LaSalle and which can be used by vehicles. Roadway along canal has been graded and opened from the wide water area to Lock 14 at LaSalle. Rustic log shelters built, one near Split Rock, one near the lotus beds, one at Twin Bluffs, and one in the lateral canal at Ottawa. Four foot bridges built across canal, one at Ottawa, one opposite Buffalo Rock Park entrance, one in wooded area east of Utica and one in village of Utica. Horse bridge built adjacent to Ottawa Aqueduct Automatic Flood Control Gates around the locks and at the canal overflow spillways have been constructed. Earth washout has been replaced in the canal bank between Locks 11 and 12. Picnic grounds have been developed with all accomodations. Planted and landscaped suitable areas and a general clean-up the entire right of way in this territory.

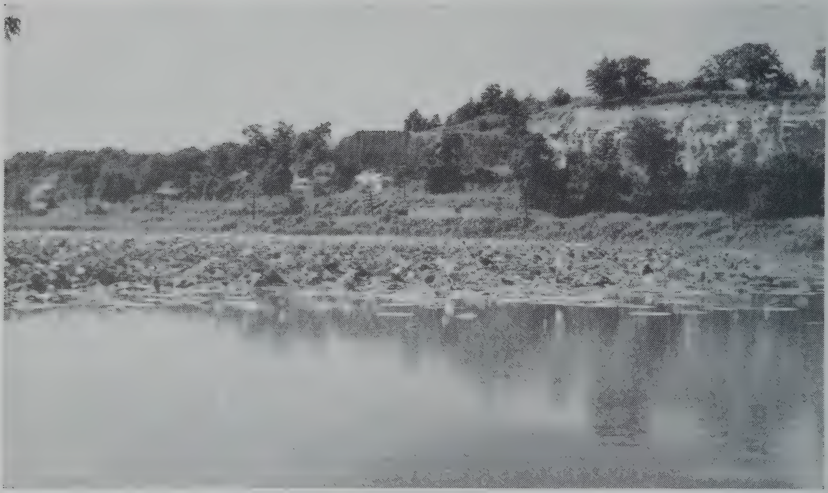


Figure No. 62. Lotus Bed in Widewater of Canal West of Buffalo Rock State Park.

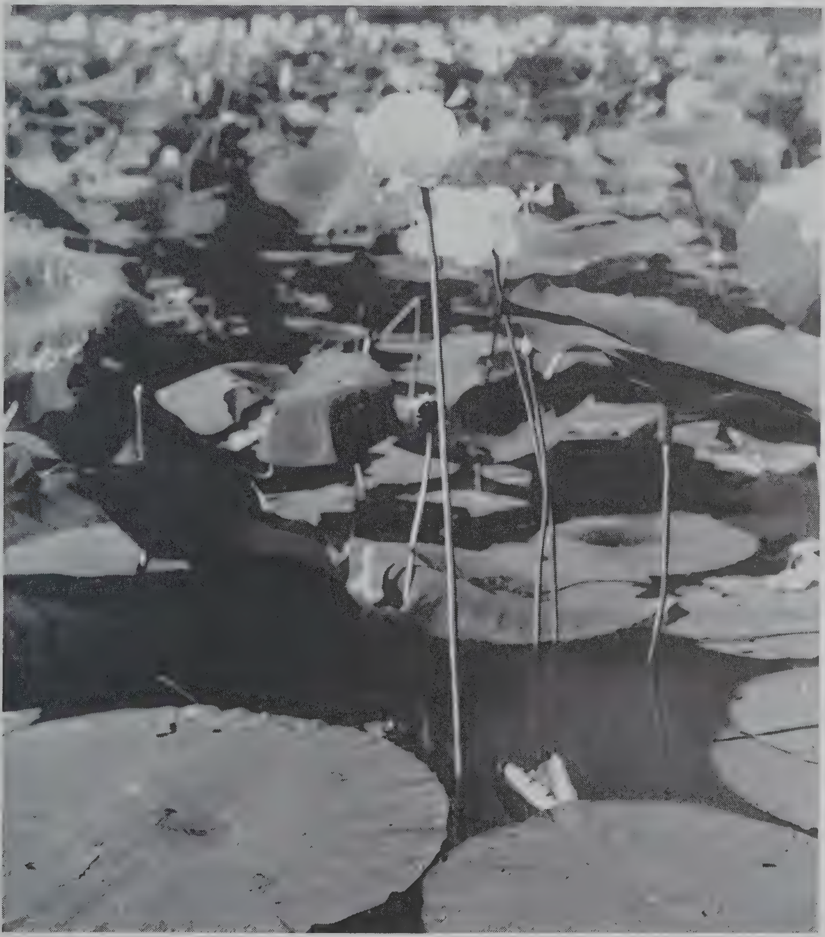


Figure No. 63. Close-up View of Lotus in Bloom.

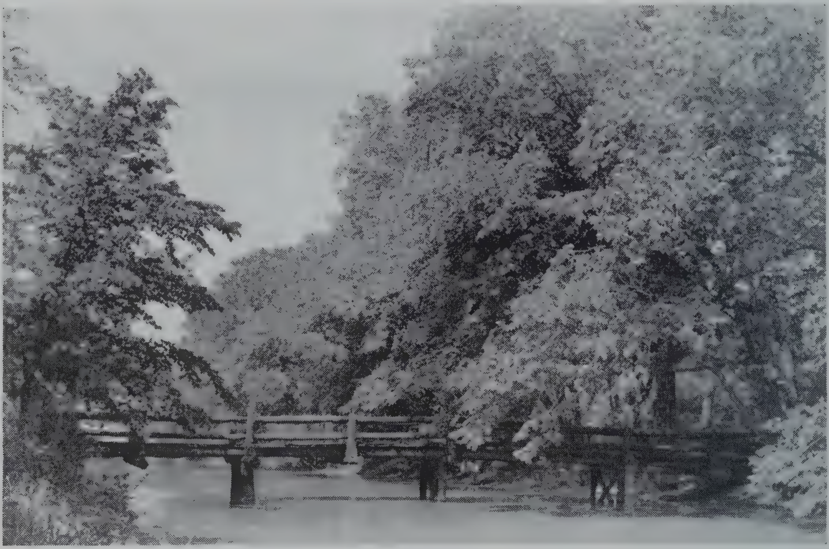


Figure No. 64. Foot Bridge Across Canal Opposite Buffalo Rock State Park Entrance.

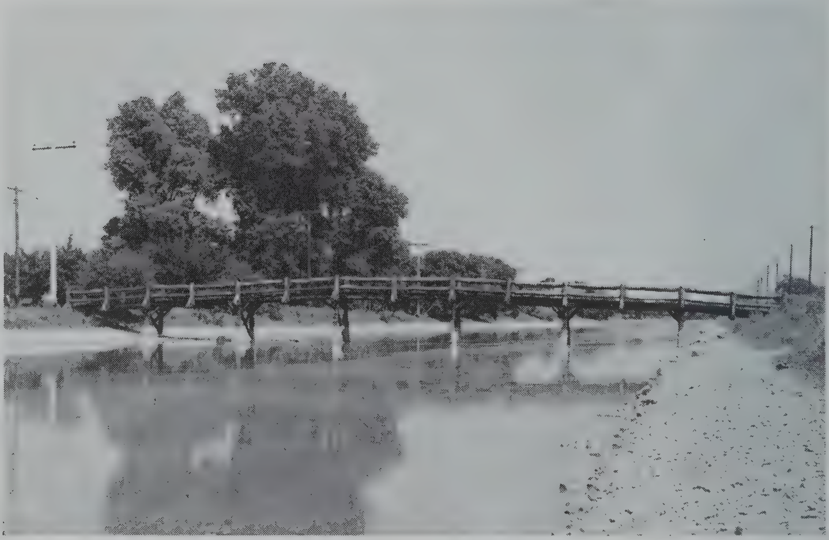


Figure No. 65. Foot Bridge Across Canal at Guion Street, Ottawa.

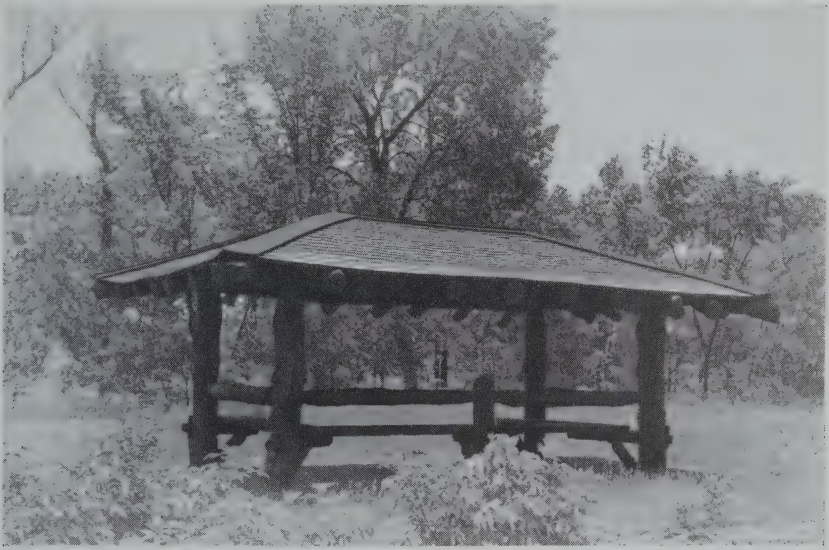


Figure No. 66. Open Trailside and Picnic Shelter Near Twin Bluffs Canal West of Ottawa State Park.

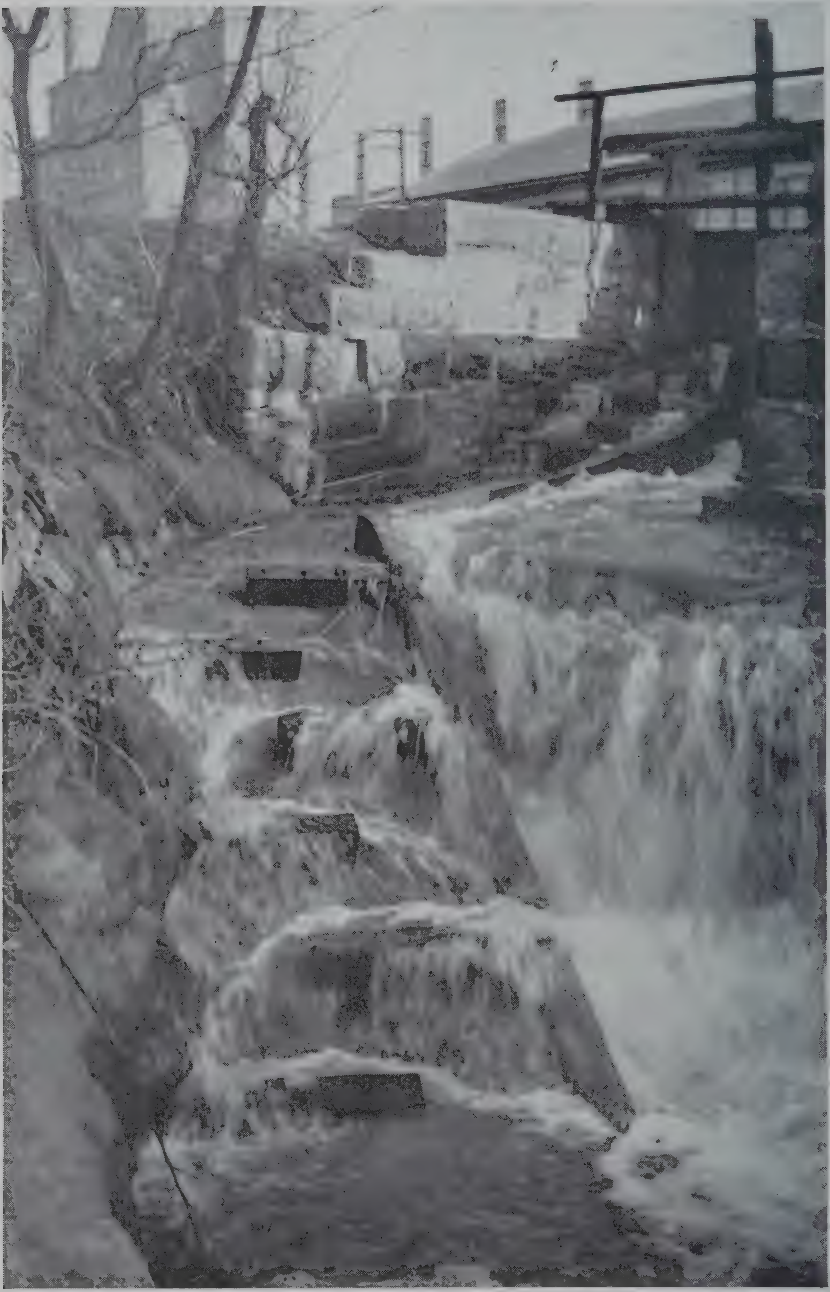


Figure No. 67. Fish Ladder in Spillway Around Lock 11, West of Ottawa.

Following is the audit report for the period July 1, 1934 to June 30, 1935 showing classified schedules of leases, collections and delinquent leases:

STATE OF ILLINOIS
DEPARTMENT OF PUBLIC WORKS AND BUILDINGS
DIVISION OF WATERWAYS
ILLINOIS—MICHIGAN CANAL FUND—FINANCES

For Fiscal Year July 1, 1934 to June 30, 1935

REVENUES.

Cash Balance in Fund—June 30, 1935		
Balance on hand July 1, 1934	$78,732.93	
Deduct—Vouchers outstanding July 1, 1934	....	....
Net balance on hand July 1, 1934	78,732.93	
Deduct—Vouchers issued by Division Fifty-eighth General Assembly July 1, 1934 to June 30, 1935	33,335.87	
Net balance in fund June 30, 1935 after all vouchers paid	$45,397.06	$45,397.06
Add—Collections deposited by Division July 1, 1934 to June 30, 1935	13,257.99	
	$58,655.05	$58,655.05
Net balance in Illinois and Michigan Canal Fund June 30, 1935	$58,655.05	$58,655.05
Invoices outstanding July 1, 1935 against Division, Fifty-eighth General Assembly, paid July, August and September, 1935	$698.07	

STATE OF ILLINOIS
DEPARTMENT OF PUBLIC WORKS AND BUILDINGS
DIVISION OF WATERWAYS
SCHEDULE OF VOUCHERS ISSUED AGAINST I. & M. CANAL FUND 58TH G. A.

JULY 1, 1934 TO JUNE 30, 1935

Month	Total	Administration and Engineering	Operation	Maintenance	Equipment
July, 1934	$2,046.56	$ 384.82	$606.77	$ 934.97	$120.00
August	2,151.39	543.70	594.06	943.58	70.05
September	2,359.86	576.94	574.35	894.07	314.50
October	2,394.76	635.68	617.79	1,141.29	----------
November	2,050.45	514.94	567.53	967.98	----------
December	2,338.43	586.05	602.57	1,167.81	----------
January, 1935	2,724.92	806.68	630.82	1,287.42	----------
February	3,201.03	1,868.50	354.87	977.66	----------
March	3,346.16	1,834.01	384.25	1,127.90	----------
April	3,304.25	1,683.68	798.57	820.00	2.00
May	3,922.50	1,797.32	576.10	1,549.08	----------
June	3,495.56	1,825.77	547.06	1,115.98	6.75
Total	$33,335.87	$13,040.09	$6,854.74	$12,927.74	$513.00

STATE OF ILLINOIS

DEPARTMENT OF PUBLIC WORKS AND BUILDINGS

DIVISION OF WATERWAYS

SUMMARY OF COLLECTIONS DEPOSITED—JULY 1, 1934 TO JUNE 30, 1935

	Bill board	Bridge	Gas main	Land	Land and house	Pole line	Railroad right of way	Switch track	Terminal	Water pipe and privileges	Well	Miscellaneous	Monthly total
July, 1934	$ 5.00	$400.00		$ 592.00	$ 23.00	$ 39.96				$150.00			$1,209.96
August	40.00			347.00	123.00	482.23				40.00			1,032.23
September	5.00		$ 1.00	325.00	23.00	25.02				555.00		$ 3.90	937.92
October		150.00	11.00	230.00	23.00	54.96				80.00			548.96
November		200.00	150.00	1,348.00	15.00	241.57							1,954.57
December		100.00		321.00		29.96		$1,550.00	$139.36	25.00	$25.00		2,200.32
January, 1935				247.50	8.00	15.02				945.00		5.30	1,220.82
February				292.50		39.96						30.23	362.69
March		325.00		375.94	8.00	64.90						5.30	779.14
April	12.50	350.00		481.00	8.00	39.96						32.00	923.46
May			25.00	1,156.00	16.00	39.96				25.00			1,261.96
June			100.00	681.00	5.00	39.96							825.96
Total	$62.50	$1,525.00	$287.00	$6,396.94	$252.00	$1,123.46		$1,550.00	$139.36	$1,820.00	$25.00	$76.73	$13,257.99

STATE OF ILLINOIS
DEPARTMENT OF PUBLIC WORKS AND BUILDINGS
DIVISION OF WATERWAYS
SUMMARY OF ILLINOIS AND MICHIGAN CANAL LEASES

Class of lease	Total number of leases	Total amount due annually	Paid-up leases		Delinquent leases	
			Number	Amount	Number	Amount in arrears
Bill-board leases	4	$ 62.50	4	$ 62.50		
Bridge leases	16	1,825.00	11	1,325.00	5	$ 600.00
Gas main leases	6	286.00	6	286.00		
Land leases	144	11,304.50	81	8,127.00	63	6,871.43
Land and house leases	1	100.00	1	100.00		
Pole line leases	8	1,118.59	6	1,073.58	2	97.02
Railroad right of way leases	2	879.67			2	1,159.34
Switch track leases	2	800.00	2	800.00		
Terminal leases						
Water pipe leases	7	4,475.00	4	700.00	3	23,325.00
Well leases	2	35.00			2	45.00
Miscellaneous	1	Sale of Spoil Bank			1	8.00
Total	193	$20,886.26	115	$12,474.08	78	$32,105.79

Remarks: This tabulation represents a summary of all leases in effect and classified according to the type or kind of lease. The total amount due on leases in arrears is $32,105.79.

I. & M. CANAL

SCHEDULE OF BILL BOARD LEASES ON AN ANNUAL BASIS

PAID UP LEASES

Date of execution	Date of expiration	Name	Description—section, township, range	Annual rental rate	Date paid to	Amount in arrears	Remarks
Apr. 15, 1924	Apr. 15, 1936	Illinois Posting Service	Sec. 11, Twp. 33, R. 3	$12.50	Apr. 16, 1936	None	
July 15, 1923	July 15, 1936	Illinois Posting Service	Sec. 11, Twp. 33, R. 3	5.00	July 15, 1935	None	
Aug. 1, 1923	Aug. 1, 1936	Illinois Posting Service	Sec. 11, Twp. 33, R. 3	40.00	Aug. 1, 1935	None	
Sept. 1, 1923	Sept. 1, 1936	Illinois Posting Service	Sec. 23, Twp. 33, R. 5	5.00	Sept. 1, 1935	None	
		Total		$62.50			

I. & M. CANAL

SCHEDULE OF BRIDGE LEASES ON AN ANNUAL BASIS

PAID UP LEASES

Date of execution	Date of expiration	Name	Description—section, township, range	Annual rental rate	Date paid to	Amount in arrears	Remarks
Apr. 25, 1922	Apr. 25, 1936	A. T. & S. F. Ry Co.	Sec. 3, Twp. 35, R. 10	$100.00	Apr. 25, 1936	None	
Mar. 1, 1910	Mar. 1, 1936	Chicago Retort & Fire Brick Co.	Sec. 12, Twp. 33, R. 3	25.00	Mar. 1, 1936	None	
Feb. 15, 1925	Feb. 15, 1945	C. R. I. & P. Ry. Co.	Sec. 3, 10, 9 and 4, Twp. 33, R. 7	350.00	Feb. 15, 1936	None	
Oct. 15, 1933	Oct. 15, 1936	C. R. I. & P. Ry. Co.	Sec. 10, Twp. 33, R. 3	100.00	Oct. 15, 1935	None	
Oct. 6, 1922	Oct. 6, 1942	Corn Products Refining Co.	Sec. 23, Twp. 38, R. 12	150.00	Oct. 6, 1935	None	
July 25, 1922	July 25, 1936	Globe Oil & Refining Co.	Sec. 26, Twp. 37, R. 10	100.00	July 25, 1935	None	
July 1, 1908	July 1, 1936	Illinois Steel Co.	Sec. 34, Twp. 36, R. 10	100.00	July 1, 1935	None	
Oct. 1, 1934	Oct. 1, 1936	National Biscuit Co.	Sec. 13, Twp. 33, R. 4	100.00	Oct. 1, 1935	None	
July 30, 1918	July 30, 1936	Northern Illinois Cereal Co.	Sec. 23, Twp. 36, R. 10	100.00	July 30, 1935	None	
July 30, 1918	July 30, 1936	The Texas Company	Sec. 14, Twp. 36, R. 10	100.00	July 30, 1935	None	
Nov. 10, 1933	June 30, 1937	The Texas Company	Sec. 14, Twp. 36, R. 10	100.00	Jan. 10, 1933	None	
		Total		$1,325.00			

I. & M. CANAL

SCHEDULE OF BRIDGE LEASES ON AN ANNUAL BASIS

DELINQUENT

Date of execution	Date of expiration	Name	Description—section, township, range	Annual rental rate	Date paid to	Amount in arrears	Remarks
Jan. 29, 1910	Jan. 29, 1936	Chicago Junction Ry. Co.	Sec. 36, Twp. 39, R. 13	$100.00	Jan. 29, 1935	$100.00	
May 1, 1920	May 1, 1936	Chicago R. I. & P. Ry. Co.	Sec. 19, Twp. 35, R. 10	100.00	May 1, 1935	100.00	
Apr. 16, 1918	Apr. 16, 1936	Illinois Stone Co.	Sec. 21, Twp. 37, R. 11	100.00	Apr. 16, 1934	200.00	
Dec. 8, 1923	Dec. 8, 1943	Illinois Traction, Inc.	Sec. 13, Twp. 33, R. 4	100.00	Dec. 8, 1934	100.00	
May 2, 1935	May 2, 1945	Morris Coal & Mining Co.	Sec. 9, Twp. 33, R. 4	100.00	May 2, 1935	100.00	
		Total		$500.00		$600.00	

I. & M. CANAL

SCHEDULE OF GAS MAIN LEASES ON AN ANNUAL BASIS

PAID UP LEASES

Date of execution	Date of expiration	Name	Description—section, township, range	Annual rental rate	Date paid to	Amount in arrears	Remarks
Apr. 17, 1935	Apr. 17, 1945	Public Service Company	Sec. 18, Twp. 33, R. 5 and Sec. 13, Twp. 33, R. 4	$ 25.00	Apr. 17, 1936	None	
June 1, 1931	June 1, 1951	Public Service Company	Sec. 7, Twp. 33, R. 4 and Sec. 11, Twp. 33, R. 3	100.00	June 1, 1936	None	
Sept. 20, 1934	Sept. 20, 1944	Public Service Company	Between Sec. 7, Twp. 33, R. 4 and East line of Sec. 14, Twp. 33, R. 4	100.00	Sept. 20, 1935	None	
Sept. 24, 1934	Sept. 24, 1944	Public Service Company	Sec. 23, Twp. 33, R. 5	10.00	Sept. 24, 1935	None	
Oct. 14, 1903	Oct. 14, 1936	Public Service Company	Across Hydraulic Basin and Canal Lands, Ottawa, Illinois	50.00	Oct. 14, 1935	None	
Oct. 10, 1925	Oct. 10, 1936	Western United Gas & Electric Company	Sec. 23, Twp. 36, R. 10	1.00	Oct. 10, 1935	None	
		Total		$286.00			

I. & M. CANAL

SCHEDULE OF LAND LEASES ON AN ANNUAL BASIS

PAID UP LEASES

Date of execution	Date of expiration	Name	Description—section, township, range	Annual rental rate	Date paid to	Amount in arrears	Remarks
Oct. 1, 1930	Oct. 1, 1936	Abugelis, A. and Wife	Sec. 12, Twp. 38, R. 12	15.00	Oct. 1, 1935	None	
Jan. 12, 1920	Jan. 12, 1936	Anderson, Mrs. Bertha	Sec. 9, Twp. 33, R. 2	10.00	Jan. 12, 1936	None	
Jan. 2, 1920	Jan. 2, 1936	Averill, M. and Wife	Sec. 3, Twp. 33, R. 7	10.00	Jan. 2, 1936	None	
Jan. 2, 1935	Jan. 2, 1936	Averill, M. and Wife	Sec. 3, Twp. 33, R. 7	15.00	Jan. 2, 1936	None	
Jan. 12, 1920	Jan. 12, 1936	Bain, K. G. and Wife	Sec. 9, Twp. 33, R. 2	10.00	Jan. 12, 1936	None	
Aug. 12, 1919	Aug. 12, 1936	Barber, W. H. Co	Sec. 35, Twp. 39, R. 13	48.00	Aug. 12, 1935	None	
May 28, 1933	May 28, 1936	Baricobich, M. and Wife	Sec. 13, Twp. 38, R. 12	30.00	May 28, 1936	None	
Jan. 5, 1905	Jan. 5, 1936	Barrows Lock Co	Sec. 23, Twp. 36, R. 10	15.00	Jan. 5, 1936	None	
Jan. 24, 1922	Jan. 24, 1936	Bergen, Chas. and Wife	Sec. 15, Twp. 37, R. 11	10.00	Jan. 24, 1936	None	
Apr. 24, 1931	Apr. 24, 1936	Bibly, Paul and Wife	Sec. 13, Twp. 38, R. 12	15.00	Apr. 24, 1936	None	
Jan. 12, 1920	Jan. 12, 1936	Bratney, A. C. and Wife	Sec. 9, Twp. 33, R. 2	10.00	Jan. 12, 1936	None	
Sept. 15, 1932	Sept. 15, 1935	Button, Earl and Wife	Sec. 3, Twp. 33, R. 7	15.00	Sept. 15, 1935	None	
Jan. 2, 1920	Jan. 2, 1936	Button, Floyd and Wife	Sec. 3, Twp. 33, R. 7	10.00	Jan. 2, 1936	None	
Apr. 6, 1931	Apr. 6, 1936	Button, Geo. and Wife	Sec. 3, Twp. 33, R. 7	15.00	Apr. 6, 1936	None	
Jan. 1, 1918	Jan. 1, 1936	C. B. & Q. Ry. Co	Ottawa and LaSalle	750.00	Jan. 1, 1936	None	
Apr. 5, 1905	Apr. 5, 1936	C., R. I. & P. Ry. Co	Sec. 10, Twp. 33, R. 7	100.00	Apr. 5, 1936	None	
Sept. 17, 1930	Sept. 17, 1936	Cook, C. D. et al	Sec. 25, Twp. 6, R. 5	15.00	Sept. 17, 1935	None	
Jan. 12, 1935	Jan. 12, 1936	Dalton, Charley	Sec. 9, Twp. 33, R. 2	15.00	Jan. 12, 1936	None	
Feb. 10, 1935	Feb. 10, 1936	Dudek, Victoria	Sec. 35, Twp. 39, R. 13	30.00	Feb. 10, 1936	None	
Jan. 12, 1920	Jan. 12, 1936	Eastman, John and Wife	Sec. 9, Twp. 33, R. 2	10.00	Jan. 12, 1936	None	
Jan. 12, 1932	Jan. 12, 1936	Enburg, Charles and Wife	Sec. 9, Twp. 33, R. 2	15.00	Jan. 12, 1936	None	
Feb. 16, 1934	Feb. 16, 1936	Findley, John and Wife	Sec. 35, Twp. 39, R. 13	30.00	Feb. 16, 1936	None	
Sept. 5, 1931	Sept. 5, 1936	Fisher, Frank and Wife	Sec. 3, Twp. 33, R. 7	15.00	Sept. 5, 1935	None	
May 10, 1924	May 10, 1936	Gedye, Calvin and Wife	Sec. 15, Twp. 33, R. 1	10.00	May 10, 1936	None	
July 1, 1922	July 1, 1936	Gedye, Calvin and Wife	Sec. 15, Twp. 33, R. 1	10.00	July 1, 1935	None	
July 25, 1922	July 25, 1936	Globe Oil & Refining Co	Sec. 25, 26, 35, Twp. 37, R. 10	150.00	July 25, 1935	None	
June 25, 1934	June 25, 1936	Granados, F. and Wife	Sec. 10, Twp. 33, R. 3	15.00	June 25, 1936	None	
June 7, 1933	June 7, 1936	Great Lakes Coal & Coke Company	Sec. 23, Twp. 36, R. 10	300.00	June 7, 1936	None	
May 1, 1933	May 1, 1936	Great Lakes Dredge & Dock Company	Sec. 29, Twp. 39, R. 14	1,500.00	Nov. 1, 1935	None	Paid semi-annually.
Sept. 25, 1918	Sept. 25, 1935	Grine, Peter & Theo. & H. Meyer	Sec. 29, Twp. 34, R. 8	10.00	Sept. 25, 1935	None	
Dec. 1, 1933	Nov. 30, 1934	Groth, Joseph	Sec. 29, Twp. 39, R. 14	15.00	Nov. 30, 1934	None	Lease cancelled.
Apr. 1, 1920	Apr. 1, 1936	Hamre, Alfred and Wife	Sec. 3, Twp. 33, R. 7	10.00	Apr. 1, 1936	None	
May 4, 1908	May 4, 1936	Holderman, S. D	Sec. 9 and 10, Twp. 33, R. 6	5.00	May 4, 1936	None	
July 15, 1932	July 15, 1936	Hurt, L. G. and Wife	Sec. 13, Twp. 38, R. 12	22.00	July 15, 1935	None	
May 1, 1932	Apr. 30, 1952	Illinois Power & Light Corp	Sec. 11, Twp. 33, R. 3	750.00	June 30, 1935	None	Paid monthly.

Apr. 1, 1932	Apr. 1, 1937	Illinois Power & Light Corp.	City of LaSalle	$150.00	Apr. 1, 1936	None	
Oct. 15, 1924	Oct. 15, 1936	Jensen, Hans and Wife	Sec. 13, Twp. 38, R. 12	15.00	Oct. 15, 1935	None	
May 1, 1925	May 1, 1936	Jovanoich, T. and Wife	Sec. 12, Twp. 38, R. 12	25.00	May 1, 1936	None	
Jan. 26, 1933	Jan. 26, 1936	Jurkovici, Geo. and Wife	Sec. 12, Twp. 38, R. 12	15.00	Jan. 26, 1936	None	
July 1, 1935	May 1, 1936	Kelley, J. and Wife	Sec., Twp. 33, R. 7	15.00	May 1, 1936	None	
Feb. 20, 1933	Feb. 20, 1936	Kindlespire, C. and Wife	Sec. 10, Twp. 33, R. 7	15.00	Feb. 20, 1936	None	
Aug. 1, 1917	Aug. 1, 1936	Klebosky, Frank A.	Sec. 35, Twp. 39, R. 13	20.00	Aug. 1, 1935	None	
Mar. 1, 1931	Mar. 1, 1936	Koleff, J. and Wife	Sec. 13, Twp. 38, R. 12	15.00	Mar. 1, 1936	None	
Sept. 25, 1918	Sept. 25, 1936	Larson, Ole	Sec. 3, Twp. 33, R. 7	15.00	Sept. 25, 1935	None	
Apr. 19, 1930	Apr. 19, 1936	Matthiessen Hegeler Zinc Co.	Sec. 15, 22, Twp. 33, R. 1	150.00	Apr. 19, 1936	None	
May 18, 1922	May 18, 1936	McCowan, Roy	Sec. 17, Twp. 34, R. 9	15.00	May 18, 1936	None	
Dec. 3, 1934	Dec. 3, 1954	McVey, William J.	Sec. 9, Twp. 35, R. 10	10.00	Dec. 3, 1935	None	
Jan. 12, 1928	Jan. 12, 1936	Meador, James and Wife	Sec. 9, Twp. 33, R. 2	15.00	Jan. 12, 1936	None	
July 14, 1930	July 14, 1936	Morris Lumber Company	Sec. 9, Twp. 33, R. 7	50.00	July 14, 1935	None	
Jan. 1, 1918	Jan. 1, 1936	Morris Paper Mills	Sec. 3, Twp. 33, R. 7	945.00	Jan. 1, 1936	None	
May 1, 1932	Apr. 30, 1952	Ottawa, City of	Sec. 11, Twp. 33, R. 3	750.00	June 30, 1935	None	Paid monthly.
Nov. 1, 1924	Nov. 1, 1936	Ottawa Silica Co.	Sec. 9, Twp. 33, R. 3	10.00	Nov. 1, 1935	None	
July 8, 1920	July 8, 1936	Ottawa, Town of	Sec. 11, Twp. 33, R. 3	5.00	July 8, 1935	None	
Oct. 15, 1927	Oct. 15, 1936	Palmer, Dana M.	Sec. 11, Twp. 33, R. 3	30.00	Oct. 15, 1935	None	
Mar. 15, 1933	Mar. 15, 1936	Peterson, M. O. and Wife	Sec. 3, Twp. 33, R. 7	15.00	Mar. 15, 1936	None	
Jan. 20, 1920	Jan. 20, 1936	Polarek, Martin	Sec. 14, Twp. 37, R. 11	50.00	Jan. 20, 1936	None	
Oct. 15, 1922	Oct. 15, 1936	Rimmele, R. J.	Sec. 15, Twp. 33, R. 1	10.00	Oct. 15, 1935	None	
July 1, 1928	July 1, 1936	Rimmele, R. W. and Wife	Sec. 15, Twp. 33, R. 1	15.00	July 1, 1935	None	
July 16, 1932	July 16, 1936	Romac, Sam and Wife	Sec. 13, Twp. 38, R. 12	15.00	July 16. 1935	None	
Jan. 12, 1920	Jan. 12, 1936	Russell, A. H. and Wife	Sec. 9, Twp. 33, R. 2	10.00	Jan. 12, 1936	None	
June 2, 1923	June 2, 1943	Schermerhorn & Warren	Sec. 15, Twp. 33, R. 1	100.00	June 2, 1936	None	
Feb. 15, 1931	Feb. 15, 1936	Sharp, W. and Wife	Sec. 3, Twp. 33, R. 7	15.00	Feb. 15, 1936	None	
July 15, 1932	July 15, 1936	Simmons, Mrs. Wm.	Sec. 13, Twp. 38, R. 12	15.00	July 15, 1935	None	
Jan. 12, 1920	Jan. 12, 1936	Smith, R. and Wife	Sec. 9, Twp. 33, R. 2	10.00	Jan. 12, 1936	None	
May 18, 1922	May 18, 1936	Spicer, W. H.	Sec. 21, Twp. 33, R. 5	15.00	May 18, 1936	None	
Sept. 15, 1932	Sept. 15, 1936	Stagner, A. & Wife	Sec. 12, Twp. 38, R. 12	15.00	Sept. 15, 1935	None	
Dec. 1, 1934	Dec. 1, 1936	Stein-Hall Mfg. Co.	Sec. 29, Twp. 39, R. 14	100.00	Dec. 1, 1935	None	
Sept. 25, 1918	Sept. 25, 1936	Still, Charles	Sec. 3, Twp. 33, R. 7	10.00	Sept. 25, 1935	None	
July 1, 1915	July 1, 1936	Strong, Mrs. Mary	Sec. 9, Twp. 33, R. 7	5.00	July 1, 1935	None	
July 1, 1926	July 1, 1936	Tadych, E. and Husband	Sec. 15, Twp. 33, R. 1	15.00	July 1, 1935	None	
Nov. 19, 1933	Nov. 19, 1938	The Texas Company	Sec. 14, Twp. 36, R. 10	350.00	Nov. 19, 1935	None	
Jan. 16, 1920	Jan. 16, 1936	Tomich, M. and Wife	Sec. 12, Tsp. 38, R. 12	20.00	Jan. 16, 1936	None	
Aug. 1, 1923	Aug. 1, 1936	Tomlenovec, Tom and Wife	Sec. 12, Twp. 38, R. 12	10.00	Aug. 1, 1935	None	
July 1, 1912	July 1, 1936	Utica Elevator Co.	Sec. 9, Twp. 33, R. 2	150.00	July 1, 1935	None	
June 15, 1931	June 15, 1936	Vasquez, Luis	Sec. 13, Twp. 38, R. 12	15.00	June 15, 1936	None	
Jan. 12, 1920	Jan. 12, 1936	Watts, Chas. and Wife	Sec. 9, Twp. 33, R. 2	10.00	Jan. 12, 1936	None	
May 22, 1919	May 22, 1936	Western Quarries Co.	Sec. 22, Twp. 37, R. 11	60.00	May 22, 1936	None	
Sept. 24, 1924	Sept. 24, 1936	Western United Gas Co.	Sec. 26, Twp. 36, R. 10	1.00	Sept. 24, 1935	None	
July 17, 1931	July 17, 1936	Wolfe, Raymond L. and Wife	Sec. 29, Twp. 34, R. 8	15.00	July 17, 1935	None	
July 10, 1919	July 10, 1936	Woock, Clarence	City of Lockport	15.00	July 10, 1935	None	
July 15, 1935	July 15, 1936	Zenchuk, Andrew	Sec. 4, Twp. 38, R. 13	15.00	July 15, 1936	None	
		Total		$7,346.00			

I. & M. CANAL

SCHEDULE OF LAND LEASES ON AN ANNUAL BASIS

DELINQUENT LEASES

Date of execution	Date of expiration	Name	Description—section, township, range	Annual rental rate	Date paid to	Amount in arrears	Remarks
June 10, 1920	June 10, 1936	Arthur, Harry R.	Sec. 20, Twp. 34, R. 9	$ 5.00	June 10, 1935	$ 5.00	
Jan. 12, 1920	Jan. 12, 1936	Arthur, Wm. and Wife	Sec. 9, Twp. 33, R. 2	10.00	Jan. 12, 1935	10.00	
May 22, 1930	July 1, 1935	Ashley, James and Wife	Sec. 35, Twp. 39, R. 13	15.00	May 22, 1935	1.67	
May 1, 1929	May 1, 1936	Bennett, Mrs. Louise	Sec. 11, Twp. 33, R. 3	15.00	May 1, 1932	60.00	
Oct. 15, 1928	Oct. 15, 1935	Byers, Mrs. Anna	Sec. 11, Twp. 33, R. 3	15.00	Oct. 15, 1930	75.00	
May 1, 1926	May 1, 1936	Cavanaugh, Emmet and Wife	Sec. 11, Twp. 33, R. 3	15.00	May 1, 1934	30.00	
July 10, 1923	July 10, 1936	Cesak, Ray and Wife	Sec. 35, Twp. 39, R. 13	10.00	July 10, 1933	20.00	
Aug. 15, 1922	Aug. 15, 1935	Coleman Hardware Co.	Sec. 9, Twp. 33, R. 7	25.00	Aug. 15, 1932	75.00	
Jan. 12, 1925	Jan. 12, 1936	Conover, Mary J.	Sec. 9, Twp. 33, R. 2	10.00	Jan. 12, 1935	10.00	
Feb. 1, 1927	Feb. 1, 1936	Consumers Company	Sec. 21, Twp. 37, R. 11	100.00	Feb. 1, 1933	300.00	
May 20, 1919	May 20, 1936	DePeaole, Mrs. Agnes	Sec. 7, Twp. 38, R. 13	7.00	May 20, 1934	14.00	
Oct. 19, 1921	Oct. 19, 1936	Farrell, T. B.	Sec. 11, Twp. 33, R. 3	25.00	Oct. 19, 1934	25.00	
Jan. 12, 1926	Jan. 12, 1936	Ford, William	Sec. 9, Twp. 33, R. 2	10.00	Jan. 12, 1933	30.00	
Jan. 2, 1920	Jan. 2, 1936	Garbutt, Wm. and Wife	Sec. 3, Twp. 33, R. 7	10.00	Jan. 2, 1935	10.00	
Aug. 1, 1922	Aug. 1, 1936	Goode, Thom. and Wife	Sec. 29, Twp. 34, R. 8	10.00	Aug. 1, 1933	20.00	
Sept. 10, 1926	Sept. 10, 1936	Hankins, W. and Wife	Sec. 13, Twp. 38, R. 12	15.00	Sept. 10, 1934	15.00	
Aug. 2, 1926	Aug. 2, 1946	Illinois Waterway Barge & Dock Co.	Sec. 30, 31, Twp. 39, R. 14 and Sec. 36, Twp. 39, R. 13	2,000.00	Aug. 2, 1933	4,000.00	
May 23, 1923	May 23, 1936	Irrgang, Mrs. Bessie	Sec. 21, Twp. 37, R. 11	10.00	May 23, 1932	40.00	
May 16, 1921	May 16, 1936	James, Henry	Sec. 20, Twp. 34, R. 9	10.00	May 16, 1932	40.00	
Jan. 18, 1933	Jan. 18, 1936	Jeffrey, James J.	Sec. 29, Twp. 34, R. 8	15.00	Jan. 18, 1934	30.00	
Nov. 15, 1920	Nov. 15, 1936	Johnson, Andrew	Sec. 35, Twp. 39, R. 13	10.00	Nov. 15, 1931	40.00	
June 1, 1933	June 1, 1936	Knowles Foundry & Machine Company	Sec. 11, Twp. 33, R. 3	5.00	Dec. 31, 1933	90.00	
Sept. 2, 1924	Sept. 2, 1936	Knowlton, Mrs. Edna	Sec. 8 and 17, Twp. 34, R. 9	10.00	Sept. 2, 1933	20.00	
June 12, 1924	June 12, 1936	Laidley, T. and Wife	Sec. 8, Twp. 34, R. 9	15.00	June 12, 1932	60.00	
Verbal		LaSalle, City of	City of LaSalle	25.00	Jan. 1, 1935	25.00	
Nov. 24, 1919	Nov. 24, 1936	Manley, Thomas	Sec. 9, Twp. 33, R. 2	75.00	July 24, 1930	325.00	
Jan. 12, 1927	Jan. 12, 1936	Manley, W. L.	Sec. 9, Twp. 33, R. 2	15.00	Jan. 12, 1931	75.00	
June 1, 1919	June 1, 1936	McGinnis, Frank	Sec. 35, Twp. 39, R. 13	20.00	June 1, 1931	100.00	
Jan. 29, 1920	Jan. 29, 1936	Miller, August	Sec. 20, Twp. 37, R. 11	10.00	Jan. 29, 1934	20.00	
Oct. 1, 1928	Oct. 1, 1936	Miller, Nettie B.	Sec. 11, Twp. 33, R. 3	10.00	Oct. 1, 1931	40.00	
Apr. 10, 1928	Apr. 10, 1936	Mitchell, Wm. and Wife	Sec. 3, Twp. 33, R. 7	20.00	Oct. 10, 1934	30.00	
Oct. 15, 1927	Oct. 15, 1935	Momper, Peter	Sec. 29, Twp. 34, R. 8	15.00	Oct. 15, 1933	30.00	
Verbal		National Fire Proofing Corporation	Ottawa, Illinois	852.00	May 31, 1935	52.68	Paid monthly.
July 23, 1921	July 23, 1936	Olish, John and Wife	Sec. 35, Twp. 39, R. 13	10.00	July 23, 1932	30.00	
Apr. 5, 1921	Apr. 5, 1936	Olish, Joseph	Sec. 35, Twp. 39, R. 13	10.00	Apr. 5, 1932	40.00	
Jan. 17, 1926	Jan. 17, 1936	Olson, Julia	Sec. 32, Twp. 38, R. 12	15.00	Jan. 17, 1935	15.00	

May 11, 1928	July 11, 1935	Parker, John	Sec. 35, Twp. 39, R. 13	15.00	May 11, 1935	2.08	
Jan. 29, 1920	Jan. 29, 1936	Piosecki, Kazmer	Sec. 20, Twp. 37, R. 11	9.00	Jan. 29, 1935	9.00	
Jan. 12, 1934	Jan. 12, 1936	Prentice, H. and Wife	Sec. 9, Twp. 33, R. 2	20.00	Jan. 12, 1935	20.00	
Apr. 23, 1932	Apr. 23, 1936	Przybyl, Mrs. Anna	Sec. 13, Twp. 38, R. 12	15.00	Apr. 23, 1933	45.00	
Mar. 8, 1919	Mar. 8, 1936	Radomski, Walter	Sec. 25, Twp. 37, R. 10	8.00	Mar. 8, 1932	32.00	
Jan. 18, 1933	Jan. 18, 1936	Rick, Henry	Sec. 29, Twp. 34, R. 8	15.00	Jan. 18, 1934	30.00	
Jan. 17, 1920	Jan. 17, 1936	Ring, Mrs. Anna	Sec. 32, Twp. 38, R. 12	25.00	Jan. 17, 1935	25.00	
Jan. 12, 1931	Jan. 12, 1936	Ristau, Geo. and Wife	Sec. 9, Twp. 33, R. 2	15.00	May 12, 1934	25.00	
May 14, 1925	May 14, 1936	Rosenbach, Jake and Wife	Sec. 12, Twp. 38, R. 12	15.00	May 14, 1934	30.00	
July 1, 1928	July 1, 1936	Sarwinski, Frank	Sec. 15, Twp. 33, R. 1	15.00	July 1, 1933	30.00	
Feb. 7, 1933	Feb. 7, 1936	Scherer, Fred T.	Sec. 11, Twp. 33, R. 3	37.50	Feb. 7, 1934	75.00	
July 1, 1922	July 1, 1936	Schurr, E. S.	Sec. 15, Twp. 33, R. 1	10.00	July 1, 1934	10.00	
June 20, 1918	June 20, 1936	Schwager, Dan and Wife	Sec. 35, Twp. 39, R. 13	20.00	June 20, 1931	100.00	
Oct. 1, 1927	Oct. 1, 1936	Schwager, John	Sec. 35, Twp. 39, R. 13	15.00	Oct. 1, 1931	60.00	
Mar. 1, 1922	Mar. 1, 1936	Smith, John and Wife	Sec. 3, Twp. 38, R. 13	30.00	Mar. 1, 1933	90.00	
Sept. 2, 1924	Sept. 2, 1936	Stacha, Julius	Sec. 15 Twp. 33, R. 1	10.00	Sept. 2, 1934	10.00	
Feb. 15, 1923	Feb. 15, 1936	Geo. Stedman and Steve Wagner	Sec. 33, Twp. 35, R. 9	25.00	Feb. 15, 1933	75.00	
Sept. 15, 1932	Sept. 15, 1936	Strader, Ray C. and Wife	Sec. 13, Twp. 38, R. 12	15.00	Sept. 15, 1933	30.00	
July 1, 1922	July 1, 1936	Timm, John	Sec. 15, Twp. 33, R. 1	10.00	July 1, 1934	10.00	
July 15, 1932	July 15, 1936	Tomich, Philip and Wife	Sec. 12, Twp. 38, R. 12	15.00	July 15, 1934	15.00	
Jan. 12, 1920	Jan. 12, 1936	Veal, Wm. and Wife	Sec. 9, Twp. 33, R. 2	10.00	Jan. 12, 1934	20.00	
Jan. 18, 1933	Jan. 18, 1936	Walker, John H	Sec. 29, Twp. 34, R. 8	30.00	Jan. 18, 1934	60.00	
Oct. 1, 1922	Oct. 1, 1936	Warnock, Wm. and Wife	Sec. 35, Twp. 39, R. 13	30.00	Oct. 1, 1932	90.00	
July 15, 1925	July 15, 1936	Wiegand, John and Wife	Sec. 20, Twp. 37, R. 11	15.00	July 15, 1932	45.00	
Jan. 29, 1920	Jan. 29, 1936	Wiegand, Rose	Sec. 20, Twp. 37, R. 11	10.00	Jan. 29, 1933	30.00	
Mar. 8, 1919	Mar. 8, 1936	Wietscykoski, M.	Sec. 25, Twp. 37, R. 11	10.00	Mar. 8, 1931	50.00	
May 3, 1919	May 3, 1936	Zygman, John P.	Sec. 20, Twp. 37, R. 11	10.00	May 3, 1931	50.00	
		Total		$3,958.50		$6,871.43	

I. & M. CANAL

SCHEDULE OF LAND AND HOUSE LEASES ON AN ANNUAL BASIS

PAID UP LEASES

Date of execution	Date of expiration	Name	Description—section, township, range	Annual rental rate	Date paid to	Amount in arrears	Remarks
July 27, 1922	July 27. 1936	A. T. & St. Fe. Ry. Co.	Sec. 36, Twp. 39, R. 13	$100.00	July 27, 1935	None	

I. & M. CANAL

SCHEDULE OF POLE LINE LEASES ON AN ANNUAL BASIS

PAID UP LEASES

Date of execution	Date of expiration	Name	Description—section, township, range	Annual rental rate	Date paid to	Amount in arrears	Remarks
Oct. 10, 1925	Oct. 10, 1936	American Telephone & Telegraph Company	Sec. 31, Twp. 34, R. 4	$ 10.00	Oct. 10, 1935	None	
July 1, 1933	June 30, 1938	Illinois Bell Telephone Co.	Between City of LaSalle and East line of LaSalle County	180.24	June 30, 1935	None	Paid monthly.
July 9, 1927	July 9, 1947	Illinois Power & Light Co.	From Peru to Joliet, Illinois	176.67	July 9, 1935	None	
Sept. 14, 1932	Sept. 14, 1952	Illinois Power & Light Co.	Sec. 11, Twp. 33, R. 3	10.00	Sept. 14, 1935	None	
July 17, 1916	July 17, 1936	Public Service Company	Jackson St., Joliet to Ashland Ave., Chicago, Illinois	417.33	July 17, 1935	None	
Oct. 10, 1925	Oct. 10, 1936	Western Union Telegraph Co.	Sec. 35, Twp. 39, R. 13	5.00	Oct. 10, 1935	None	
		Total		$799.24			

DELINQUENT

Date of execution	Date of expiration	Name	Description—section, township, range	Annual rental rate	Date paid to	Amount in arrears	Remarks
July 1, 1933	June 30, 1938	Illinois Bell Telephone Co.	Between Ashland Ave., Chicago and West line of Grundy County	$299.28	June 30, 1935	None	Paid monthly.
May 1, 1927	May 1, 1936	Marseilles Telephone Co.	Sec. 13, Twp. 33, R. 4; Sec. 18, Twp. 33, R. 5; Sec. 15, Twp. 33, R. 4	48.51	May 1, 1934	$97.02	
		Total		$347.79		$97.02	

I. & M. CANAL

SCHEDULE OF RAILROAD RIGHT OF WAY LEASES ON AN ANNUAL BASIS

PAID UP LEASES

Date of execution	Date of expiration	Name	Description—section, township, range	Annual rental rate	Date paid to	Amount in arrears	Remarks

DELINQUENT

Date of execution	Date of expiration	Name	Description—section, township, range	Annual rental rate	Date paid to	Amount in arrears	Remarks
Apr. 1, 1914	April 1, 1936	Chicago, Ottawa & Peoria Ry. Co.	Sec. 20, Twp. 33. R. 5	$279.67	Apr. 1, 1934	$559.34	
Sept. 1, 1928	Feb. 12, 1935	Illinois Traction, Inc.	Sec. 7, Twp. 33, R. 4 and Sec. 10, 11, 12, Twp. 33, R. 3	600.00	Sept. 1, 1934	600.00	
		Total		$879.67		$1,159.34	

I. & M. CANAL

SCHEDULE OF SWITCH TRACK LEASES ON AN ANNUAL BASIS

PAID UP

Date of execution	Date of expiration	Name	Description—section, township, range	Annual rental rate	Date paid to	Amount in arrears	Remarks
Dec. 5, 1929	Dec. 5, 1939	C., B. & Q. Ry. Co.	Sec. 10, 11, Twp. 33, R. 3	$400.00	Dec. 5, 1935	None	
Dec. 5, 1929	Dec. 5, 1939	C., R. I. & P. Ry. Co.	Sec. 10, 11, Twp. 33, R. 3	400.00	Dec. 5, 1935	None	
		Total		$800.00			

I. & M. CANAL

SCHEDULE OF TERMINAL LEASES ON AN ANNUAL BASIS

Date of execution	Date of expiration	Name	Description—section, township, range	Annual rental rate	Date paid to	Amount in arrears	Remarks

I. & M. CANAL

SCHEDULE OF WATER PIPE LEASES ON AN ANNUAL BASIS

PAID UP LEASES

Date of execution	Date of expiration	Name	Description—section, township, range	Annual rental rate	Date paid to	Amount in arrears	Remarks
Oct. 1, 1903	Oct. 1, 1936	Chicago Retort & Fire Brick Co.	Sec. 12, Twp. 33, R. 3	$ 80.00	Oct. 1, 1935	None	
May 14, 1923	May 14, 1943	Commonwealth Edison Co.	Sec. 35, Twp. 39, R. 13	25.00	May 14, 1936	None	
Aug. 1, 1917	Aug. 1, 1936	King & Hamilton Co.	Ottawa, Illinois	40.00	Aug. 1, 1935	None	
Aug. 1, 1917	Aug. 1, 1936	Ottawa Silica Company	Sec. 10, Twp. 33, R. 3	555.00	Aug. 1, 1935	None	
		Total		$700.00			

DELINQUENT

Date of execution	Date of expiration	Name	Description—section, township, range	Annual rental rate	Date paid to	Amount in arrears	Remarks
Sept. 18, 1918	Sept. 18, 1935	Adler, J. C. Company	Block 18, West Joliet	$ 25.00	Sept. 18, 1932	$ 75.00	
Dec. 16, 1918	Dec. 16, 1935	American Steel & Wire Co.	Rockdale Mill, Joliet, Illinois	2,250.00	Dec. 16, 1932	6,750.00	
*May 24, 1922	May 24, 1942	Fred D. Briet	Sec. 29, Twp. 34, R. 4	1,500.00	May 24, 1925	16,500.00	
		Total		$3,775.00		$23,325.00	

* In court, written lease assigned to Dayton Hydro Electric Company.

I. & M. CANAL

SCHEDULE OF WELL LEASES ON AN ANNUAL BASIS

PAID UP LEASES

Date of execution	Date of expiration	Name	Description—section, township, range	Annual rental rate	Date paid to	Amount in arrears	Remarks

DELINQUENT

Date of execution	Date of expiration	Name	Description—section, township, range	Annual rental rate	Date paid to	Amount in arrears	Remarks
Mar. 18, 1924	Mar. 18, 1944	City of Joliet	Sec. 16, Twp. 35, R. 10	$10.00	Mar. 18, 1934	$20.00	
Jan. 1, 1911	Jan. 1, 1936	City of LaSalle	Sec. 14, Twp. 33, R. 1	25.00	Jan. 1, 1935	25.00	
		Total		$35.00		$45.00	

I. & M. CANAL

SCHEDULE OF MISCELLANEOUS LEASES ON AN ANNUAL BASIS

PAID UP LEASES

Date of execution	Date of expiration	Name	Description—section, township, range	Annual rental rate	Date paid to	Amount in arrears	Remarks

DELINQUENT

Date of execution	Date of expiration	Name	Description—section, township, range	Annual rental rate	Date paid to	Amount in arrears	Remarks
Verbal lease		Atchison, Topeka & Santa Fe Ry. Co.	Near Lemont, Illinois	10c per cu. yd	June 26, 1935	$8.00	

BUREAU OF AUDITS AND ACCOUNTS.

G. W. Flattery, *Chief.*

Tabulation showing the appropriations for the biennium July 1, 1933 to June 30, 1935, for the various funds of the Division of Waterways; the amounts expended during each year of the biennium and the unexpended balance on June 30, 1935.

Source of revenues for the various appropriations.

General Revenue—
  Waterways General.
  Flood Relief Illinois Rivers.
  Flood Relief Other Than Illinois Rivers.
  Maintenance of Navigation Illinois Rivers.
Flood Relief Illinois Rivers, Senate Bill No. 777, was appropriated contingent on refunds from the Federal Government of unexpended balances of various flood relief projects.
Waterway Construction Fund—Part of the $20,000,000.00 bond issue for the deep waterway.
Water Terminal Fund—Revenue is derived from payments made by the Chicago Produce Terminal Company for erection of a terminal building at Damen Avenue, Chicago.
Illinois and Michigan Canal Funds are derived from rentals of Illinois and Michigan Canal lands.

Statement of collections deposited to the credit of the various funds for each year of the biennium is also shown.

During April 1935 an audit was completed of the funds of the Division of Waterways and many recommendations made for improving the control of the various appropriations. A complete new bookkeeping system was designed and installed July 1, 1935 and it was decided to rework the books of the entire Fifth-eight biennium and place them on the new basis.

FINANCIAL REPORT—DIVISION OF WATERWAYS

	Appropriation July 1, 1933 to June 30, 1935	Expended July 1, 1933 to June 30, 1934	Expended July 1, 1934 to June 30, 1935	Total expended for biennium ending June 30, 1935	Unexpended balance June 30, 1935
Waterways General:					
Office expense	$ 10,000.00	$ 5,113.97	$ 4,617.06	$ 9,731.03	$ 268.97
Travel expense	2,000.00	789.86	1,113.74	1,903.60	96.40
Repairs and equipment	500.00	233.24	239.51	472.75	27.25
Engineering service	35,000.00	11,945.44	20,929.10	32,874.54	2,125.46
Surveys and investigations	30,000.00	3,469.16	24,711.47	28,180.63	1,819.37
Prevention of obstructions	20,000.00	8,400.55	10,816.29	19,216.84	783.16
Flood relief:					
Illinois River Valley	35,949.91	20,710.75	15,239.16	35,949.91	----------
Other than Illinois River Valley	106,427.29	71,143.27	35,284.02	106,427.29	----------
Illinois Rivers SB 777	110,000.00	----------	30,359.54	30,359.54	79,640.46
Waterway Construction Fund	1,300,000.00	520,141.68	557,160.62	1,077,302.30	222,697.70
Illinois & Michigan Canal	60,000.00	24,133.08	34,033.94	58,167.02	1,832.98
Maintenance of Navigation Illinois River	150,000.00	53,526.64	93,589.41	147,116.05	2,883.95
Water Terminal Fund	200,000.00	----------	197,998.35	197,998.35	2,001.65
Total	$2,059,877.20	$719,607.64	$1,026,092.21	$1,745,699.85	$314,177.35

	July 1, 1933 to June 30, 1934	July 1, 1934 to June 30, 1935	Total collections July 1, 1933 to June 30, 1935
Collections:			
Illinois & Michigan Canal Fund	$16,010.85	$ 13,257.99	$ 29,268.84
Flood Relief Refunds	33,788.52	16,708.57	50,497.09
General Revenue Fund	1.44	----------	1.44
Waterway Maintenance Fund	92.71	----------	92.71
Waterway Fund	15,413.04	23,454.78	38,867.82
Water Terminal Fund	----------	198,256.00	198,256.00
Total	$65,306.56	$251,677.34	$316,983.90

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~~1936~~

STATE OF ILLINOIS

HENRY HORNER, *Governor*

AUG. 26TH 1818

NINETEENTH ANNUAL REPORT OF DIVISION OF WATERWAYS

July 1, 1935 to June 30, 1936

★

Issued By
DIVISION OF WATERWAYS
DEPARTMENT OF PUBLIC
WORKS AND BUILDINGS

[Printed by authority of the State of Illinois.]

STATE OF ILLINOIS

HENRY HORNER, *Governor*

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NINETEENTH ANNUAL REPORT OF DIVISION OF WATERWAYS

July 1, 1935 to June 30, 1936

*

Issued By

DIVISION OF WATERWAYS
DEPARTMENT OF PUBLIC
WORKS AND BUILDINGS

TRADES UNION LABEL COUNCIL 7

(31132)

ADMINISTRATIVE OFFICERS OF THE DEPARTMENT OF PUBLIC WORKS AND BUILDINGS, DIVISION OF WATERWAYS, FOR THE FISCAL YEAR JULY 1, 1935 TO JUNE 30, 1936.

HENRY HORNER, Governor.

ROBERT KINGERY, Director.

DIVISION OF WATERWAYS.

WALTER M. SMITH, D. Sc., Chief Engineer
M. V. AHLVIN, Assistant Chief Engineer

BUREAU CHIEFS.

W. G. POTTER, Chief of Bureau of Rivers and Lakes Control.
GUNNI JEPPESEN, Bridge Engineer.
T. B. CASEY, Terminal Engineer.
JOHN NICHOLS, Auditor I. and M. Canal.
G. W. FLATTERY, Accountant

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WATERWAYS.

WALTER M. SMITH, D. Sc., *Chief Engineer.*

JURISDICTION OF THE DIVISION OF WATERWAYS.

The Division of Waterways being successor to the Rivers and Lakes Commission all powers, duties and jurisdiction of the said commission became vested by law in the Division of Waterways, especially as to the jurisdiction over all rivers and lakes in the State of Illinois, to prevent encroachments thereon; the powers and duties of the former Illinois Waterway Commission with reference to the construction, operation and maintenance of the Illinois Waterway and the development and utilization of the power thereof; and also the powers and duties of the former Illinois and Michigan Canal Commissioners for the control and management of the Illinois and Michigan Canal, the maintenance of the navigability thereof and lease of the canal lands are vested by law in the Division of Waterways.

The Division of Waterways is the custodian of the Illinois Waterway and the Illinois and Michigan Canal and has charge of operation, and maintenance of operating machinery on all the movable bridges on these waterways.

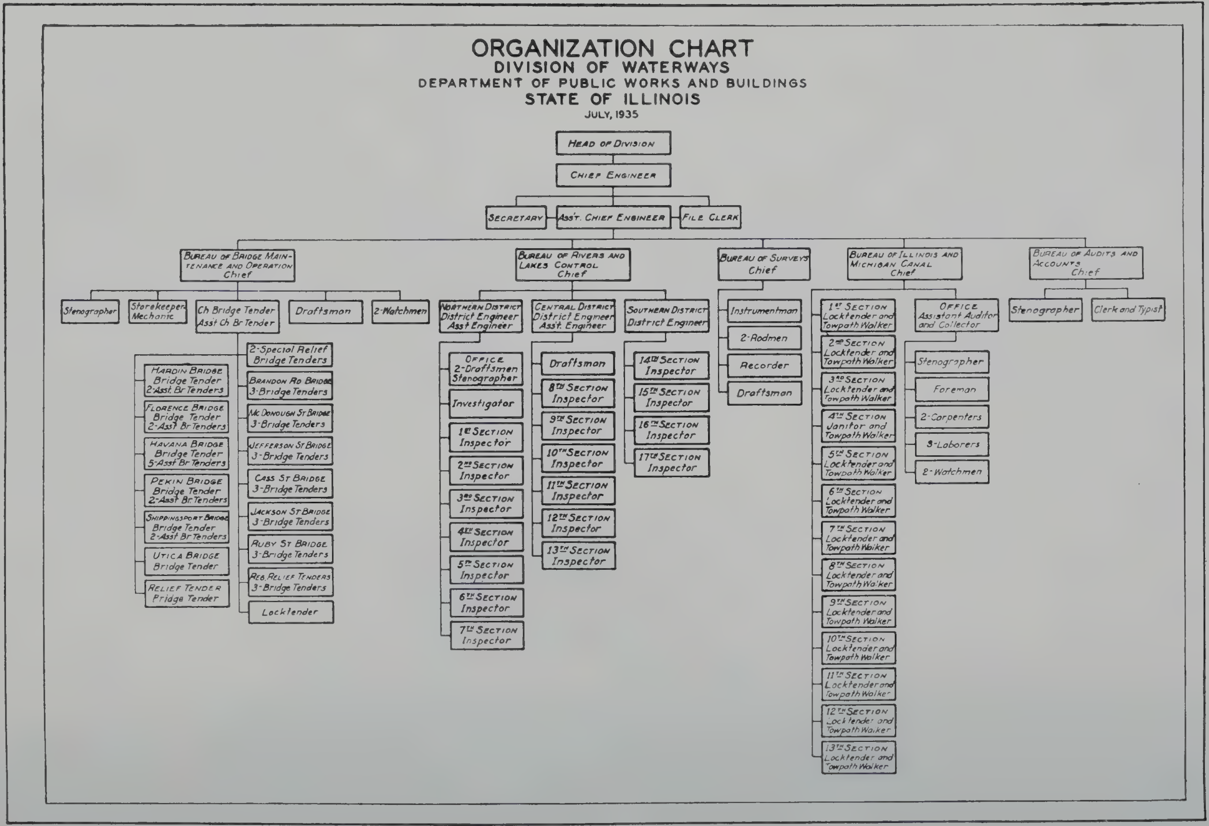
On September 1, 1934 the Division of Waterways also took over the operation and maintenance of operating machinery and navigation lights of all the movable bridges on the Illinois River constructed by the Division of Highways.

Application must be made to the Division of Waterways for a permit for the construction of any structure on any river, lake or waterway in the State of Illinois wherein the State or the people of the State have any rights or interests, and such applications must be approved by the Division of Waterways and signed by the Director of Public Works and Buildings before construction shall be started.

ORGANIZATION OF THE DIVISION.

During the year the Division of Waterways remained the same as for the preceding year until late in the year when slight changes occurred.

The organization chart is shown on the following page:



ORGANIZATION CHART
DIVISION OF WATERWAYS
DEPARTMENT OF PUBLIC WORKS AND BUILDINGS
STATE OF ILLINOIS
JULY, 1935

HEAD OF DIVISION
CHIEF ENGINEER
SECRETARY
ASS'T. CHIEF ENGINEER
FILE CLERK
BUREAU OF BRIDGE MAINTENANCE AND OPERATION Chief
Stenographer
Storekeeper Mechanic
Ch Bridge Tender Asst Ch Br Tender
Draftsman
2-Watchmen
HARDIN BRIDGE Bridge Tender 2-Asst. Br Tenders
FLORENCE BRIDGE Bridge Tender 2-Asst Br Tenders
HAVANA BRIDGE Bridge Tender 5-Asst Br Tenders
PEKIN BRIDGE Bridge Tender 2-Asst Br. Tenders
SHIPPINGSPORT BRIDGE Bridge Tender 2-Asst Br Tenders
UTICA BRIDGE Bridge Tender
RELIEF TENDER Pridge Tender
2-Special Relief Bridge Tenders
BRANDON RD BRIDGE 3-Bridge Tenders
MC DONOUGH ST BRIDGE 3-Bridge Tenders
JEFFERSON ST BRIDGE 3-Bridge Tenders
CASS ST BRIDGE 3-Bridge Tenders
JACKSON ST BRIDGE 3-Bridge Tenders
RUBY ST BRIDGE 3-Bridge Tenders
REG. RELIEF TENDERS 3-Bridge Tenders
Locktender
BUREAU OF RIVERS AND LAKES CONTROL Chief
NORTHERN DISTRICT District Engineer Asst Engineer
OFFICE 2-Draftsmen Stenographer
Investigator
1st SECTION Inspector
2nd SECTION Inspector
3rd SECTION Inspector
4th SECTION Inspector
5th SECTION Inspector
6th SECTION Inspector
7th SECTION Inspector
CENTRAL DISTRICT District Engineer Asst. Engineer
Draftsman
8th SECTION Inspector
9th SECTION Inspector
10th SECTION Inspector
11th SECTION Inspector
12th SECTION Inspector
13th SECTION Inspector
SOUTHERN DISTRICT District Engineer
14th SECTION Inspector
15th SECTION Inspector
16th SECTION Inspector
17th SECTION Inspector
BUREAU OF SURVEYS Chief
Instrumentman
2-Rodmen
Recorder
Draftsman
BUREAU OF ILLINOIS AND MICHIGAN CANAL Chief
1st SECTION Locktender and Towpath Walker
2nd SECTION Locktender and Towpath Walker
3rd SECTION Locktender and Towpath Walker
4th SECTION Janitor and Towpath Walker
5th SECTION Locktender and Towpath Walker
6th SECTION Locktender and Towpath Walker
7th SECTION Locktender and Towpath Walker
8th SECTION Locktender and Towpath Walker
9th SECTION Locktender and Towpath Walker
10th SECTION Locktender and Towpath Walker
11th SECTION Locktender and Towpath Walker
12th SECTION Locktender and Towpath Walker
13th SECTION Locktender and Towpath Walker
OFFICE Assistant Auditor and Collector
Stenographer
Foreman
2-Carpenters
3-Laborers
2-Watchmen
BUREAU OF AUDITS AND ACCOUNTS Chief
Stenographer
Clerk and Typist

APPROPRIATIONS FOR FOLLOWING BIENNIUM JULY 1, 1935 TO JUNE 30, 1937.

The following appropriations were made by the Fifty-ninth General Assembly during this year to carry on the work of the Division of Waterways for the biennium beginning July 1, 1935:

For office expenses	$ 10,000.00
For travel expenses	10,000.00
For repairs and equipment	500.00
For engineering services and expenses	35,000.00
For services and expenses in investigation and preventing obstructions in or dumping garbage, waste and refuse matter in, upon or along the shores of rivers, streams, or other bodies of water in this State in such manner as to make it possible for the same to be washed into such stream or other body of water in time of flood or high water levels	32,000.00
For services and expenses in the survey of State land and meandered waters, and in the investigations of complaints of encroachments and pollutions, and in investigations for the reclamation and protection of the lands and property of the State of Illinois	30,000.00
For salaries and wages, office expenses, travel, operation, repairs, equipment and permanent improvements necessary for the operation and maintenance of the Illinois and Michigan Canal payable only out of such funds or monies as shall be covered into the State Treasury and placed by the State Treasurer to the credit of the special fund known as the Illinois and Michigan Canal Fund	50,000.00
For the construction of the Illinois Waterway and its appurtenances, whether by contract or by direct employment of services, labor, materials and equipment, and for the payment for property taken or damaged in the construction, operation, or maintenance of the Illinois Waterway and its appurtenances; the repair, replacement or reconstruction of existing drainage or sewer system which will be destroyed or materially interfered with in the construction of the Illinois Waterway and the appurtenances in accordance with the provision of "An Act in relation to the construction, operation and maintenance of a deep waterway from the water power plant of the Sanitary District of Chicago at or near Lockport, to a point in the Illinois River at or near Utica, and for the development and Utilization of the water power thereof," approved June 17, 1919, payable from the Waterway Fund	75,000.00
For all work necessary for the maintenance of navigation and structures on all Illinois rivers under the Department of Public Works and Buildings	275,000.00
For flood relief and rivers and lakes control to be expended either in cooperation with the United States Government or agencies thereof and political subdivisions of the State or otherwise; total for flood relief	500,000.00
Total appropriations	$1,017,500.00
For flood relief work reappropriated under Senate Bill No. 566	$46,256.83

BUREAU OF BRIDGE MAINTENANCE AND OPERATION

ILLINOIS WATERWAY BRIDGES.

The bridge construction program for bridges over the Illinois Waterway was completed by final acceptance and payments on Contracts B-17A for substructure and B-17D, superstructure of Ruby Street bridge; and B-19, Ruby Street bridge operator's house. This left a balance of forty-one thousand nine hundred and two and 50/100 dollars ($41,902.50) in the Waterway Construction Fund to cover these final payments.

Upon the completion of the Ruby Street Bridge which completed the bridge building program of this Division the office of Bridge Engineer was discontinued and the office of Bridge Maintenance Engineer created. Mr. Gunni Jeppesen formerly Bridge Engineer was appointed to this position.

At the end of the year the Division of Waterways was operating the following movable bridges:

Name.	Location.	Type.
Ruby Street	Joliet	Trunnion Bascule
Jackson Street	Joliet	Rolling Lift Bascule
Cass Street	Joliet	Rolling Lift Bascule
Jefferson Street	Joliet	Rolling Lift Bascule
McDonough Street	Joliet	Rolling Lift Bascule
Brandon Road	Near Joliet	Trunnion Bascule
Utica	Near Utica	Rim Bearing Swing
Shippingsport	Near LaSalle	Vertical Lift
Pekin	Pekin	Vertical Lift
Havana	Havana	Rim Bearing Swing
Florence	Florence	Vertical Lift
Joe Page	Hardin	Vertical Lift

In addition to these the following movable bridges were turned over to the Division of Waterways for operation and maintenance of operating machinery:

Name.	Location.	Type.
Torrence Ave	Little Calumet River, Chicago	Bascule
Lemont	Lemont, Main Channel Sanitary District	Bob tail swing
Romeo	Romeo, Main Channel Sanitary District	Bob tail swing

These three bridges are not yet operated regularly as the vertical clearance has been sufficient as fixed bridges up to the present time. Whenever the War Department deems it necessary, operation will be placed on these bridges and they will be operated regularly.

The electrical heating systems placed in the operator's houses of these bridges when constructed were found so expensive that they were discontinued and gas fired steam systems installed resulting in a great reduction in operating expenses.

Revised contracts for electric power were entered into also which materially reduced the cost, the total saving per month in operating cost due to these changes was over $500.00.

Installation of Navigation Lights (Electric) at Justice Bridge was done under contract by the Central States Electrical Construction Co. at a cost of $668.00.

In addition, the Division of Waterways has charge of the following fixed bridges which were constructed by this division:

Name.	Location.	Type.
Smith's	Channahon	Steel Through Truss
Marseilles Canal	Marseilles	Steel Through Truss
Marseilles River	Marseilles	Steel Through Truss
Hilliard	Ottawa	Cantilever

More information about these bridges will be found in reports of Mr. M. V. Ahlvin, Assistant Chief Engineer and Mr. Gunni Jeppesen, Bridge Maintenance Engineer.

BUREAU OF RIVERS AND LAKES CONTROL.

The work of this bureau was continued under Mr. W. G. Potter as Chief of the Bureau.

As the barge canal at Damen Avenue, Chicago had been completed, Mr. T. B. Casey formerly Terminal Engineer was appointed District Engineer for the Central District of the State and Assistant to Mr. Potter.

The work of the Bureau was very satisfactory during the year, the following special work being carried out in addition to the regular inspection work of the bureau.

(1) An old hulk that had lain in Stetson's Canal Chicago for several years was removed under contract with Fitzsimmons & Connell Dredge and Dock Co. for $3,370.00.

(2) Construction of three loop levees in Vandalia Drainage and Levee District was done under contract by Dees Bros., at a cost of $4,127.00.

The levees at this place were in a very dangerous condition when repairs were made.

(3) A channel was dredged in Pistakee, Nippersink and Grass Lakes under contract by Raymond Pregenzer and Son at a cost of $17,653.95.

(4) Considerable weed cutting was done in the channels of the Fox Chain of Lakes at a cost of $198.00.

Considerable work was done on the various rivers and lakes by the Federal W. P. A. forces under the general supervision of this Bureau. Descriptions and pictures will be found in Mr. Potter's report. Considerable work was also carried out by the Civilian Conservation Corps.

A total of 577 permits was granted by the Division, 307 of these being formal and 268 being informal permits in weekly groups to the State Division of Highways.

A statement of the status of the $500,000.00 appropriation for "Rivers and Lakes Control and Flood Relief" and reappropriation of funds returned from allotments from the Flood Relief Fund Illinois River" to the U. S. War Department is given in Mr. Potter's report.

BUREAU OF SURVEYS AND INVESTIGATION.

This bureau has made many surveys on various rivers and lakes of the State. An account of these surveys and investigations will be found in the report of Mr. Frank S. Brown in charge of this bureau.

BUREAU OF ILLINOIS AND MICHIGAN CANAL.

On May 14, 1936 Mr. V. D. Ehringer was appointed General Superintendent also Auditor and Collector of the Illinois and Michigan Canal.

A very complete account of the work of this bureau accompanied by pictures and a financial statement is given in Mr. Ehringer's report.

BUREAU OF AUDITS AND ACCOUNTS.

The total appropriations for the Division of Waterways for the biennium July 1, 1935 to June 30, 1937 amounted to $1,063,756.83. This was a decrease of $996,120.37 from the appropriations for the biennium July 1, 1933 to June 30, 1935. This decrease was due to the completion of the bridge building program in connection with the construction of the Illinois Waterway and the exhaustion of the funds secured by the sale of bonds authorized for this work.

The expenditures from July 1, 1935 to June 30, 1936 were $290,104.50, leaving a balance on hand at the end of the fiscal year of $773,652.33.

The total collections during the year amounted to $42,314.40.

A complete financial statement will be found in the report of Mr. G. W. Flattery, Chief Accountant.

TRAFFIC ON THE ILLINOIS WATERWAY.

Traffic on the Illinois Waterway has been rapidly increasing since its completion in the latter part of 1932.

In the table below is shown the traffic on the Illinois Waterway for the years 1933, 1934 and 1935.

Year.	Tons.	Value.	Passengers.
1933[1]	482,096	$ 6,723,778	1,881
1934[2]	969,102	16,557,342	1,720
1935[3]	1,004,829	30,694,683	1,663

[1] Includes 62,496 tons "through traffic," value $ 3,320,361.

[2] Includes 142,905 tons "through traffic," value 5,771,361.

[3] Includes 134,303 tons "through traffic," value 10,075,690.

It will be seen from the above table that the traffic in the two years from 1933 to 1935 increased 108% in tonnage and 200% in value, a very satisfactory increase.

Several important reports upon the question of flood protection plans for different parts of the State were made as follows:

Report on Flood Prevention Plans for Illinois, Mississippi and Ohio Rivers by the Chief Engineer.

Report on Applications for Aid in Flood Relief by the Chief Engineer.

Report to the Chief Engineer on Levee Setbacks Mile 80 to Mile 89, The South Beardstown Bottleneck by T. B. Casey.

Report to the Chief Engineer on Drainage and Levee Districts in the Illinois, Mississippi, Ohio and Wabash River Valleys by T. B. Casey.

Supplementary Report to the Chief Engineer on Drainage and Levee Districts in the Illinois, Mississippi, Ohio and Wabash River Valleys by T. B. Casey.

These reports are on file but it is thought they are too voluminous to include in this Annual Report on account of numerous tables, diagrams and drawings.

ENGINEERING ACTIVITIES.

M. V. AHLVIN, *Assistant Chief Engineer.*

BUREAU OF ILLINOIS WATERWAY CONSTRUCTION.

The only activity in this bureau was the final payments to the contractors on the Ruby Street bridge which practically exhausted all of the actual cash funds in this account.

BUREAU OF MAINTENANCE OF NAVIGATION.

Just prior to July 1, 1935 negotiations with the utility company serving the Joliet bridges were consummated, which resulted in new contracts and a rebate on the old contracts. Also, it was proven that the electrical heating systems were too expensive to operate and they were discarded for gas-fired steam systems installed by W. A. Kenley of Joliet. Bids were taken on August 28, 1935 with the following result:

TABULATION OF BIDS.

HEATING SYSTEMS, JOLIET BRIDGES (JACKSON, CASS, JEFFERSON AND McDONOUGH STREETS) DIVISION OF WATERWAYS.

(Bids Opened August 28, 1935.)

Name of Bidder.	"A" 4 heating systems complete with flue and vent stack—Scheme "X".	"B" 4 heating systems complete with flue and vent stack—Scheme "Y".	"C" 4 heating systems complete with flue and vent stack—Scheme "Z".
W. A. Kenley, 120 Briargate Ave., Joliet, Ill.	$3,200.00	$2,980.00	$2,925.00

The combined resultant saving made by the above changes in electric contracts and heating is 65.93%. This is arrived at as follows:

Cost of operation for 12 months previous per month		$ 796.24
Less average cost of electric current now per mo.	$ 202.25	
Less average cost of gas for heat per month now	69.09	271.31
Total Average Monthly Saving		$ 524.93

On November 6, 1935 bids were opened on the work necessary to remove an old hulk from Stetson's Canal in Chicago and the contract was awarded to the low bidder, Fitzsimons & Connell Dredge and Dock Company. The following is a tabulation of bids on the above work:

TABULATION OF BIDS.

REMOVAL OF SUNKEN HULK IN STETSON'S CANAL IN WEST FORK OF SOUTH BRANCH OF THE CHICAGO RIVER.

(Bids Opened November 6, 1935, at 10:00 A. M.)

	Great Lakes Dredge and Dock Company.		Fitzsimons & Connell Dredge and Dock Co.		Mackie-Thompson & Tamms.	
	Unit.	Amount.	Unit.	Amount.	Unit.	Amount.
Item No. 1:						
Removal of sunken hulk	--------	$4,188.00	--------	$3,250.00	--------	$3,130.00
Item No. 2:						
Dredging and placing material on east bank, 200 cu. yds. (estimated)	2.00	400.00	.60	120.00	4.00	800.00
Item No. 3:						
Dredging—Alternate, 200 cu. yds. (estimated)	1.50	300.00	.80	160.00	--------	--------

On January 23, 1936 bids were taken for the electrification of the navigation lights on the Justice Park bridge and the work was awarded to the low bidder; a tabulation of bids follows:

TABULATION OF BIDS.

INSTALLATION OF NAVIGATION LIGHTS ON THE JUSTICE PARK BRIDGE OVER THE DRAINAGE CANAL.

(Bids Opened January 23, 1936.)

Name of Bidder.	Furnishing and installing complete system of navigation lights.
Central State Electrical Const. Co	$690.00
Wadeford Electric Company	695.00
Post Electric Company	775.00
Pierce Electric Company	885.00

BUREAU OF RIVERS AND LAKES CONTROL.

In addition to participation in Federal flood relief contracts, this bureau advertised and awarded three pieces of work which were awarded to the lowest bidder. The weed cutting in Grass Lake being done by both bidders at the same unit cost. Following is a tabulation of bids:

TABULATION OF BIDS.

CONSTRUCTION OF THREE LOOP OR RING LEVEES VANDALIA DRAINAGE AND LEVEE DISTRICT.

(Bids Opened September 11, 1935, at 10:00 A. M.)

Items.	Dees Bros., Oblong and Shobonier.		Walter Weaver, Shobonier.		Harry Riley, Shelbyville.	
	Unit.	Amount.	Unit.	Amount.	Unit.	Amount.
Bingham's Bend—						
Quantity: 4,075 cu. yds.	.149	$ 607.17	.33	$1,344.75	.18	$ 733.50
South of U. S. 51—						
Quantity: 12,160 cu. yds.	.149	1,811.84	.27	3,283.20	.15½	1,884.80
Roe's Cabin—						
Quantity: 10,760 cu. yds.	.149	1,603.24	.28	3,012.80	.16	1,721.60
Combined quantities: 26,995 cu. yds.—Total bid		$4,022.25		$7,640.75		$4,339.90
Deduction for personal bond		No bond.		Includes bond.		43.40
Net		$4,022.25		$7,640.75		$4,296.50

TABULATION OF BIDS.

DREDGING IN CHAIN OF LAKES, LAKE COUNTY, ILL.

(Bids Opened November 29, 1935, at 11:00 A. M.)

	Raymond Pregenzer and Son, Antioch, Ill.		Anton P. Freund, McHenry, Ill.	
	Unit.	Amount.	Unit.	Amount.
Item No. 1—				
Dredging proposed channel in Pistakee Lake south of Highway 60, as specified in Par. 2A. Estimated 6,700 cu. yds.	.30	$2,010.00	$31.00	$2,100.00* 2,104.00
Item No. 2—Cubic yard basis—				
Dredging as specified in Fox Chain of Lakes in Par. 2B. Estimated 29,200 cu. yds.	.30	8,760.00		
Alternate 1—Hourly basis—				
Dredging as specified in Par. 2B. Estimated 29,200 cu. yds.				
Hours	1,180		1,500 or more.	
Hydraulic dredge	8″		6″	
Per hour	7.50	8,850.00	7.00	10,500.00
Alternate 2—Lineal ft. basis—				
Dredging proposed channel in Fox Chain of Lakes as specified in Par. 2B. Estimated 9,600 lin. ft.				
Hydraulic dredge	8″			
Per lineal ft.	.91	8,736.00		
Certified checks		$1,100.00 State Bank of Antioch.		$500.00 210.00 West McHenry State Bank.

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* Discrepancy in bid of Anton P. Freund. Bid in figures $31 on Item 1; evidently means 31c; total amount written as $2,100.00 and in another place as $2,104.00 (both written and in figures).

TABULATION OF BIDS.

CUTTING UNDER-WEEDS IN FOX CHAIN OF LAKES.

(Date of invitation to bid: July 20, 1936.)

(Informal Bids.)

Name of Bidder.	Per day of 10 hours.	Per hour for overtime when ordered by engineer.
Ferris and Soule, Antioch, Ill	$15.00	$1.50
R. Pregenzer & Son, Antioch, Ill	15.00	1.50

BUREAU OF SURVEYS AND INVESTIGATIONS.

Due to the stress of work along the rivers and in drainage districts, the Illinois and Michigan Canal survey suffered. There has been but little actual survey work along the canal, although the work of monumenting the property and transit lines that have been laid out has progressed. These monuments are concrete with a bronze plate in the top which is marked either "Property Line" or "Transit Line." The station and transit point is marked by using steel dies.

BUREAU OF ILLINOIS AND MICHIGAN CANAL.

On May 14th Mr. V. D. Ehringer assumed charge of the Illinois and Michigan Canal as General Superintendent.

During the year C.C.C. activities continued on the Illinois and Michigan Canal Parkway. A development on the canal property at Channahon was commenced and a very delightful park area is the result.

A small section of the "Old Pioneer" property at Ottawa was leased for the handling of grain for water shipment, which will increase the income to the farmers in the territory served by this facility, approximately $60,000 per year.

BUREAU OF AUDITS AND ACCOUNTS.

A new system of accounting, designed by Mr. R. R. Macleod of the Division of Highways, was installed July 1, 1935, which has worked out very well. Mr. G. W. Flattery, Chief of the bureau has described our new system in his report.

In submitting inventories it was found that in many cases the values used were fictitious and without foundation, and as a result and to indicate the true values some parts of it were changed completely.

The Illinois and Michigan Canal inventory previous to July 1, 1935 contained an item of $5,592,768.59, indicated as "Land, Lots and Canal Proper," containing in all 1814.93 acres and 75 lots. These figures will reflect an average value of approximately $3,000 per acre, and it includes all canal structures, such as channel, locks, gates and culverts.

Under "Improvements—Buildings" the properties were valued at their depreciated value and totalled $721,275.00.

Under "Improvements—Other than Buildings" only $17.50 was listed.

The new inventories were prepared by taking as a basis the land values per acre as indicated in Bulletin 399, prepared by the University of Illinois Agricultural Experiment Station, and set up under "Lands and Lots."

The item of "Improvements—Buildings" was compiled by setting a fair value to reproduce new, all existing old structures and adding the value of the new structures just recently built by C.C.C.

Under "Improvements—Other than Buildings" we have now included the value of the canal itself, arrived at by using the original quantities and unit prices, arriving at an original value of $8,540,427.90. It was then decided that in order to restore the channel to its original depth that 2,800,000 cubic yards of earth had to be removed at a cost of 20 cents per cubic yard. This result was deducted from the original value making an inventory value of $7,980,427.90.

The approximate original cost of the locks from the old records totaled $287,000.00. This was based upon the unit cost per foot of lift. Waste gates and spillways based on the old record costs totaled approximately $42,900.00.

The four aqueducts which are now built of steel rather than of wood, as the original structures were set down at their approximate contract costs on the inventory making a total for these structures of $213,000.00.

In addition to the above structures there are numerous culverts under the canal and the dam at Channahon is still in existence. These structures from the old records cost originally approximately $188,000.00.

The new inventory values as now shown are as follows:

Lands and Lots	$1,646,284.24
Improvements—Buildings	1,026,800.00
Improvements—Other than Buildings	8,711,327.90

The other items on the inventory remained practically the same except for additions due to purchases during the year.

In numerous cases on the Illinois Waterway a parcel of land was purchased and after the pool had been raised this same parcel was sold including the title to the submerged land. The selling price being only a fractional part of the original cost it is plain to see that a value has to be set for the flowage right which is equal, where all the parcel was disposed of, to the difference between the original cost and the selling price, and the item as far as inventory is concerned changed from land to improvements.

The inventory value of all of the bridges built from the Waterway Construction Fund has been adjusted to include all of the miscellaneous charges against the bridges, and it now is set up in accordance to the details as set forth in the Eighteenth Annual Report.

In total this inventory is exactly the same, but it now represents a truer picture of the facts.

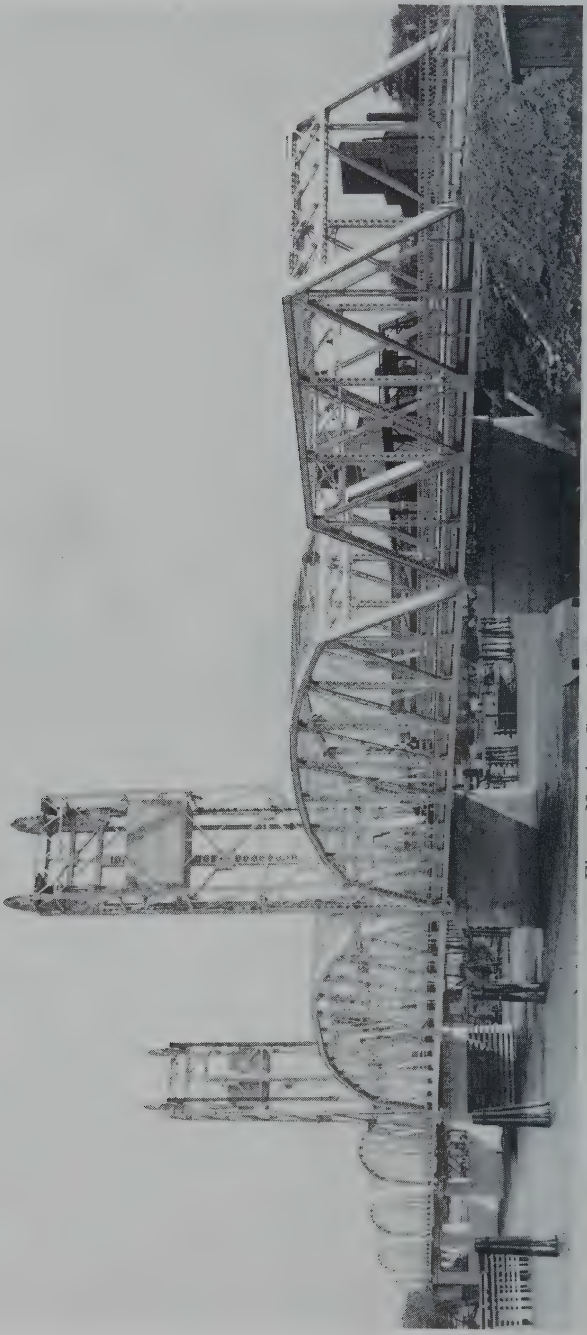

Figure No. 1. General View of Pekin Bridge.

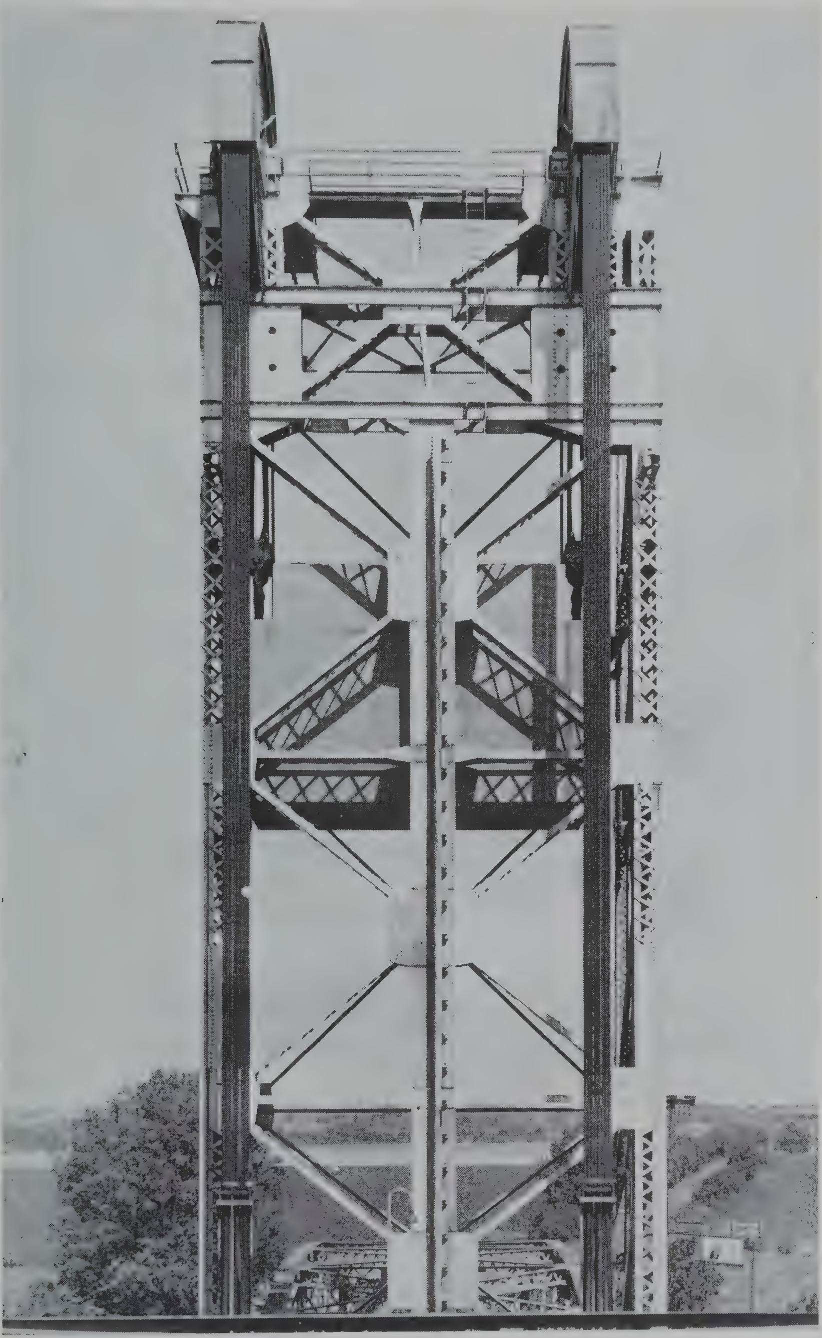

Figure No. 2. Pekin Bridge. West Tower, showing counterweight cables.

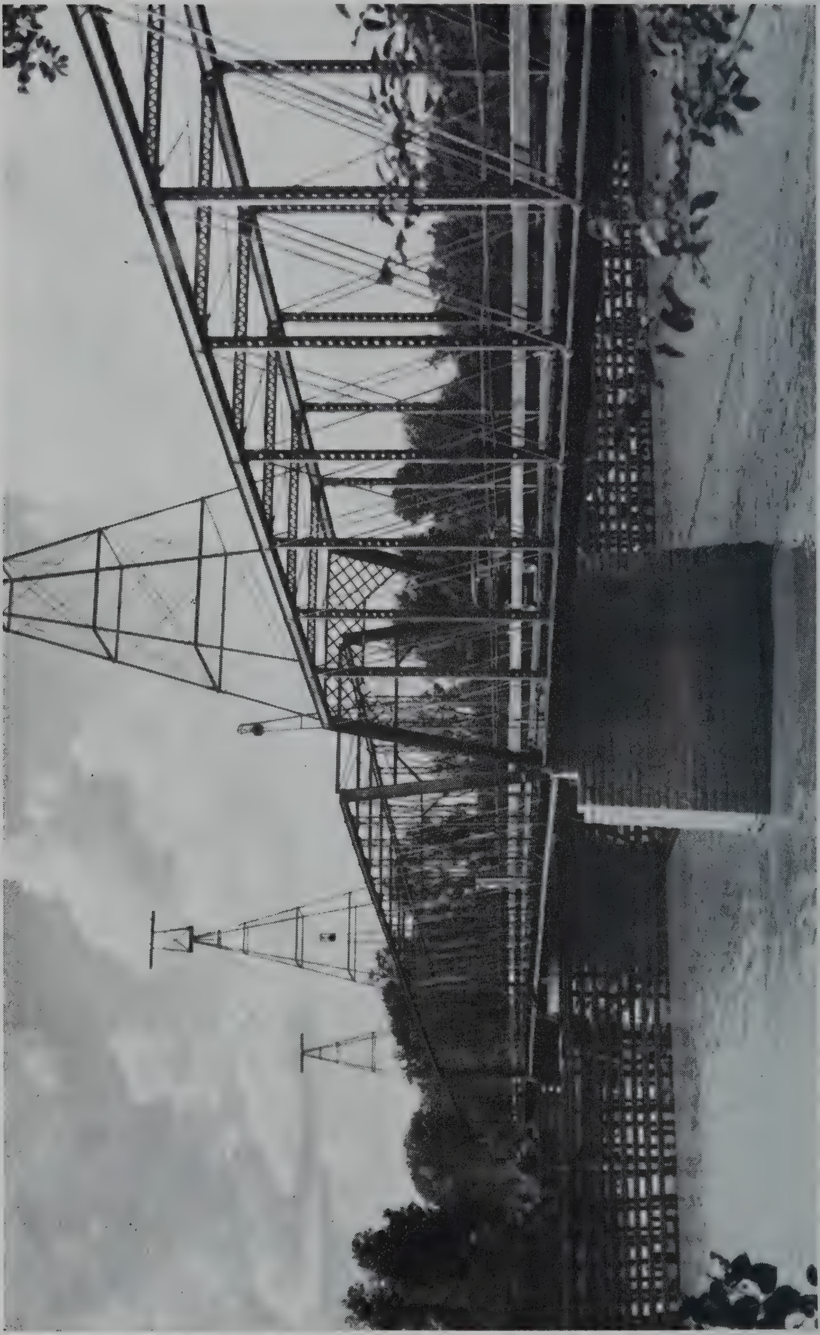

Figure No. 3. General View of Havana Bridge.

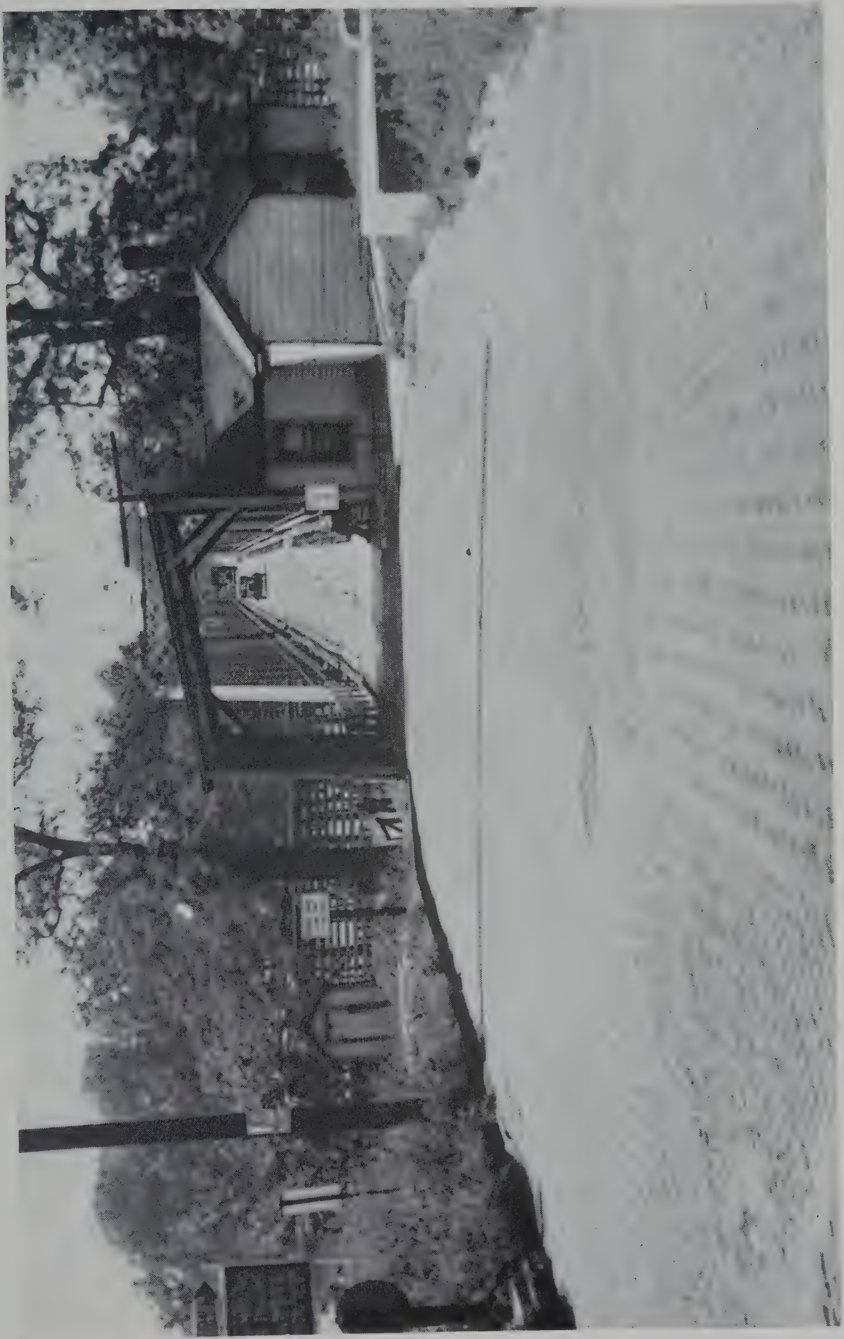

Figure No. 4. East Approach to Havana Bridge.

BUREAU OF BRIDGE MAINTENANCE.

Gunni Jeppesen, *Bridge Maintenance Engineer.*

CONSTRUCTION PROGRAM COMPLETED.

The Ruby Street Bridge in Joliet, which was the last bridge on the Illinois Waterway bridge program to be completed, was opened to traffic on July 20th, 1935, with a colorful ceremony, held under the auspices of the Northwest Side Civic Association, and attended by City, County, and State officials. The Ruby Street Bridge is fully described and illustrated in the 16th and 18th Annual Reports.

BRIDGE MAINTENANCE AND OPERATION.

The bridge construction program having been completed, the office of Bridge Engineer was abandoned on July 31st, 1935 and the writer was appointed Maintenance Engineer in charge of operation of all the movable bridges belonging to the State (except the Lacon pontoon bridge which is soon to be abandoned) and also in charge of maintenance, as shown by the following Schedule. Louis C. Mork, Chief Bridgetender, is in direct charge of the work in the field. He visits each bridge at regular intervals and is on call night and day in case of emergencies.

Improvements, and the installation of new equipment on existing bridges, are also being handled from this office. See Table 1 on Pages 27 and 28.

As in the previous year the bridges operated by the State have been manned twenty-four hours a day throughout the year except the Utica bridge which is a hand operated swing bridge where the bridgetender, who lives near the bridge, is notified by telephone when a vessel is approaching.

The monthly number of operations for each bridge will appear in Table 2 on Page 29.

The total number of bridge operations for the year was 5492 and it is a satisfaction to note that not a single accident has occurred which might be charged to the bridgetenders or to faulty equipment.

Special items of maintenance, and of improvements and new installations, are described in the following:

DRESSING COUNTERWEIGHT CABLES.

During the year the counterweight cables of the Pekin, Florence and Hardin Lift Bridges have been dressed and the material and equipment is on hand for dressing the cables of the LaSalle bridge which will be done shortly.

The material used was The Hodson Corporation's No. 9EH Cable Dressing which was applied with leather gloves by men riding in a special rig, made for the purpose and operated by a ground man standing on a walkway on top of the lift span.

The amount of lubricant used and the number of square feet covered by each pound of cable dressing will appear from the following table:

TABLE 3—RECORD OF CABLE DRESSING USED ON COUNTERWEIGHT CABLES.

	LaSalle Bridge.	Pekin Bridge.	Florence Bridge.	Hardin Bridge.
Size of cable	2″ diam.	2¼″ diam.	2″ diam.	2¼″ diam.
Aggregate length of cable	3,688 lin. ft.	3,808 lin. ft.	3,528 lin. ft.	4,156 lin. ft.
Amount of dressing used		686 lbs.	550 lbs.	637½ lbs.
Linear feet covered, per pound		5.6 lin. ft.	6.4 lin. ft.	6.5 lin. ft.
Square feet covered, per pound		3.25 sq. ft.	3.35 sq. ft.	3.85 sq. ft.
Date	To be done in August.	Nov. 5-13, 1935.	June 9-12, 1936.	June 16-18, 1936.

PAINTING.

The Florence Bridge is now being painted by the Highway Division (June 1936).

The Division of Waterways will take bids in August on sand-blasting and painting Smith's Highway Bridge and the Canal Span of the Marseilles Bridge where the original paint has failed completely.

ADJUSTING HAVANA BRIDGE.

For some years there has been a slight progressive settlement of the center pier of the Havana Swing Bridge causing it to lean towards the West. The roller track has been leveled up from time to time but early in 1936 it was found that the swing span would bind at the West end indicating that further settlement had taken place.

Accurate measurements were taken, indicating that the track was out of level by about 1⅝ inches and this was overcome by driving flat steel wedges under the track rail, inserting the necessary shims, and grouting new holding down bolts into place where needed. The work was done by the Wisconsin Bridge and Iron Company which has the contract for the substructure of the new high level bridge which is being built by the Highway Division a few blocks south of the old bridge.

The name plate on the swing span of the Havana bridge reads as follows:

Milwaukee Bridge and Iron Works

C. W. James & Co.

Builders

Milwaukee, Wisconsin

1876

This bridge, then, is sixty years old. In spite of this and its considerable size—the swing span is three hundred feet overall—it can be opened or closed by two men in a couple of minutes and during the past year has never failed to open promptly when signaled by an approaching vessel.

ROMEO AND LEMONT BRIDGES.

The Romeo and Lemont bridges are bob-tailed swing bridges crossing the Sanitary and Ship Canal at Romeo and Lemont respectively. They were built by the Chicago Sanitary District some thirty-five years ago but were not equipped with operating machinery and power equipment.

In 1935 the State Highway Division contracted with the Strobel Construction Company of Chicago for the necessary work for making these two bridges operative and on March 31, 1936 the work was finally inspected and accepted, and these bridges were turned over to the Division of Waterways for operation, and maintenance of the machinery.

By agreement with the U. S. Engineer Office these bridges, however, have not, as yet, been put in operation pending a decision as to what shall be done with the Santa Fe Railroad bridge which is located just above the Lemont bridge. This, also, is a bob-tailed swing bridge but is without operating machinery and power equipment. It has a headroom for navigation of 19.4 feet which is only about two feet more than the headroom under the Romeo and Lemont bridges and little would, therefore, be gained by making these bridges operative so long as the Santa Fe Railroad bridge remains stationary.

UTICA SWING BRIDGE.

On July 1, 1936, the Division of Waterways will take bids on the installation of a gasoline engine, and other work incidental thereto, on the Utica Swing Bridge.

LASALLE BRIDGE.

The Shippingsport Bridge at LaSalle is a cable lift bridge, similar to the Pekin, Florence and Hardin bridges but operated by a gasoline engine only, while the other three bridges are operated by an electric motor with a gasoline engine as a stand-by. Also, on the Shippingsport Bridge the roadway gates are operated by hand, and an inordinate amount of time is consumed by the bridgetender descending from the operator's house and running first to one end of the bridge and then to the other (to close the gates) and then up into the operator's house again before he can start the engine and raise the bridge.

Accordingly, plans and specifications for the electrification of this bridge have been prepared by the Highway Division and it is expected that this work will be carried out during the next fiscal year.

HEATING PLANTS.

When the operators' Houses of the Jackson, Cass, Jefferson, and McDonough Street bridges were built they were equipped with electric heaters. This was done to save floor space and to avoid dirt and smoke and at a time when it was expected that navigation would close and bridge operation be suspended during the four coldest months of the year. On this basis the cost would not have been excessive, particularly since this system of heating is very flexible and since the heaters were controlled by thermostats so that they would be in use only when needed. Furthermore, an automatic control was provided which would cut off the current from the heaters when the motors were running so as not to increase the demand charge.

The War Department, however, decided to keep the Waterway open the year round, and under these circumstances the difference in cost between electric and other forms of heat became very marked. Furthermore, the electric heaters did not prove reliable in service there being numerous and repeated burn-outs during the coldest weather, and it was therefore decided to replace the electric heaters with low pressure steam heating plants with gas fired boilers.

This work was done in the fall of 1935, the contractor being W. A. Kenley, Joliet.

A similar installation was made in the operator's house of the Ruby Street Bridge.

All the other operators' houses are heated by coal stoves.

NAVIGATION LIGHTS, JUSTICE PARK BRIDGE.

During the year the oil burning navigation lights on the Justice Park Bridge over the Main Drainage Canal on U. S. 45 have been replaced with electric lights controlled by a photo-electric switch. The contractor for this work was the Central States Electrical Construction Company of Chicago.

SIDEWALK ON MARSEILLES BRIDGE.

During the year a five foot sidewalk was added on the East side of the Marseilles Bridge. This work was handled by the Division of Highways.

REPLACING WATER PIPES.

In spite of all precautions the water supply pipes suspended under the approach spans and leading to the operators' houses of the Jackson and Jefferson Street bridges in Joliet froze and cracked during the prolonged period of sub-zero weather of last winter. They have since been replaced and relocated so as to be more accessible, the work being done by Schmitz Bros., Joliet.

DAMAGE BY ICE.

The winter 1935-36 was unusually severe, resulting in the Illinois River freezing over from bank to bank for almost its entire length.

The thirty-five days from Jan. 19th to Feb. 22nd, 1936 were the coldest on record since 1871 and had more days at, or below, zero than any other like period.

Then from minus 10° on Feb. 22nd, 1936 the thermometer (at the Starved Rock Lock) rose to plus 46° on Feb. 24th and remained above the freezing point for several days.

This caused the ice in the river to break up suddenly and much sooner than expected, and considerable damage was done to bridges and other structures and to farmhouses on low ground.

None of the bridges belonging to the State were damaged but some of the timber fenders and pile clusters were carried away as follows:

LaSalle Bridge: The fenders and all the pile clusters, except four, were demolished. The navigation lights had been moved back from the pile clusters to the fenders as a precautionary measure but two of these were lost when the fenders went out.

Havana Bridge: Three (3) pile clusters knocked down. Nose of west fender damaged and one navigation light lost.

Florence Bridge: One pile cluster knocked over and some of the steel plates on the face of the fenders torn off.

Hardin Bridge: One (1) pile cluster badly damaged and two (2) pile clusters knocked out of line.

ILLINOIS WATERWAY TRACINGS.

On April 20, 1936 the tracings of all drawings pertaining to the construction of the Illinois Waterway were turned over to the U. S. Engineer Office in Chicago. These drawings cover locks and dams, and appurtenant structures—but not bridges—and include both the drawings prepared by the State since work was started on the Waterway in 1920 and the working drawings and shop drawings prepared by the contractors.

Before the drawings were turned over to the Government a set of Van Dyke negatives were prepared as a permanent record to be kept in the files of the Division.

NEW QUARTERS.

On May 4th, 1936 the Bureau of Bridge Maintenance and Operation moved from the temporary Field Office buildings at the foot of Washington Street to the Will County National Bank Building, Joliet. The offices are located on the third floor while the storeroom and maintenance shop are in the basement. The basement space occupied by the State is separated from the general basement space by partitions consisting of a series of wooden bins with wire netting above, the bins being in 5′ 8″ sections bolted together end to end so that they, when desired, may be disconnected and moved to some other location.

TABLE 1—SCHEDULE OF BRIDGE MAINTENANCE AND OPERATION.

Name and location of bridge.	Type.	On route.	Year completed.	Maintenance.					Operation.	Remarks.
				Main structure.	Roadway.	Sidewalks.	Machinery and electrical equipment.	Navigation lights.		
Little Calumet River.										
Torrence Avenue	D. L. Bascule	U. S. 330		H	H	H	W	W (N)	W	Machinery not installed. No roadway lights.
Halsted Street	Fixed	S. B. I. 1		H	H	H		W (N)		No roadway lights.
Calumet—Sag Channel.										
Ashland Avenue	Fixed	S. B. I. 49		H	H	H		W (N)		No roadway lights.
Crawford Avenue	Fixed	S. A. 51	1932	H	H	H		W (N)		No roadway lights.
Cicero Avenue		S. B. I. 50								New structure—plans underway.
Harlem Avenue	Fixed	S. B. I. 42A	1928	H	H	H		W (N)		No roadway lights.
Southwest Highway	Fixed	S. B. I. 7	1931	H	H	H		W (N)		No roadway lights.
96th Avenue	Fixed	U. S. 45	1928	H	H	H		W (N)		No roadway lights.
Sag	Fixed	S. B. I. 54	1935	H	H	H		W (N)		No roadway lights.
Sanitary and Ship Canal.										
Justice	Fixed	U. S. 45	1933	H	H	H		W		No roadway lights.
Sag	Fixed	S. B. I. 54	1935	H	H	H		W		No roadway lights.
Lemont	Bobtail swing		1899	S	S	S	W	W	W	No roadway lights.
Romeo	Bobtail swing		1899	S	S	S	W	W	W	No roadway lights.
Illinois Waterway.										
Ruby Street, Joliet	D. L. bascule	U. S. 66	1935	W	H	C	W	W	W	City maintains roadway and sidewalk lights.
Jackson Street, Joliet	D. L. rolling lift		1933	W	C	C	W	W	W	City maintains roadway and sidewalk lights.
Cass Street, Joliet	D. L. rolling lift	U. S. 30	1933	W	H	C	W	W	W	City maintains roadway and sidewalk lights.
Jefferson Street, Joliet	D. L. rolling lift	S. B. I. 69	1933	W	H	C	W	W	W	City maintains roadway and sidewalk lights.

TABLE 1—SCHEDULE OF BRIDGE MAINTENANCE AND OPERATION—Concluded.

Illinois Waterway—Concluded.

Name and location of bridge.	Type.	On route.	Year completed.	Maintenance.					Operation.	Remarks.
				Main structure.	Roadway.	Sidewalks.	Machinery and electrical equipment.	Navigation lights.		
McDonough Street, Joliet	D. L. rolling lift	U. S. 6	1934	W	H	C	W	W	W	City maintains roadway and sidewalk lights.
Brandon Road	D. L. bascule		1932	W	County		W	W	W	No roadway lights.
Smiths Highway, Channahon	Fixed	S. A. 44	1933	W	County			W		No roadway lights.
Morris	Fixed	U. S. 52	1933	H	H			W		Roadway lights maintained by Division of Waterways.
Seneca	Fixed	S. B. I. 70A	1933	H	H			W		Roadway lights maintained by Division of Waterways.
Marseilles Bridge	Fixed	S. A. 15	1933	H	H	H		W		Sidewalk lights maintained by city
Hilliard Bridge, Ottawa	Fixed	S. B. I. 23	1933	H	H	C		W		Roadway lights maintained by city

Illinois River.

Name and location of bridge.	Type.	On route.	Year completed.	Main structure.	Roadway.	Sidewalks.	Machinery and electrical equipment.	Navigation lights.	Operation.	Remarks.
Utica	Swing	S. B. I. 178	1908	H	H		W	W	W	No roadway lights.
LaSalle	Vertical lift	U. S. 51	1929	H	H		W	W	W	Roadway lights maintained by Division of Waterways.
Spring Valley	Fixed	F. A. 94	1935	H	H			W		Roadway lights maintained by Division of Waterways.
Henry	Fixed	S. B. I. 89-C	1935	H	H			W		Roadway lights maintained by Division of Waterways.
Pekin	Vertical lift	S. B. I. 9	1930	H	H	H	W	W	W	Roadway lights maintained by Division of Waterways.
Havana	Swing	S. B. I. 78	1876	H	H		W	W	W	No roadway lights.
Meredosia (under construction)	Fixed	S. B. I. 104	1936	H	H			W		Roadway lights maintained by Division of Waterways.
Florence	Vertical lift	U. S. 36	1929	H	H		W	W	W	Roadway lights maintained by Division of Waterways.
Hardin	Vertical lift	S. B. I. 38	1931	H	H		W	W	W	Roadway lights maintained by Division of Waterways.

Key—
H: Division of Highways.
W: Division of Waterways.
S: Sanitary District.
C: City.
(N): No navigation lights at present.
D. L.: Double leaf.

TABLE 2—NUMBER OF BRIDGE OPENINGS, JULY 1, 1935, TO JUNE 30, 1936.

Month.	Name of bridge.														Remarks.
	Lemont.	Romeo.	Ruby Street, Joliet.	Jackson Street, Joliet.	Cass Street, Joliet.	Jefferson Street, Joliet.	McDonough Street, Joliet.	Brandon Road.	Utica.	LaSalle.	Pekin.	Havana.	Florence.	Hardin.	
July, 1935	Not operated.	Not operated.	27	55	47	49	49	54*	29	38	41	90	45	49	
August			99	69	63	69	66	73	24	30	48	74	39	42	
September			69	53	46	46	53	74	22	27	41	109	47	44	
October			71	53	48	58	48	42	18	24	29	83	29	24	
November			58	53	46	49	55	40	20	25	20	34	27	19	
December			40	34	34	36	36	30	8	9	10	21	14	9	
January, 1936			24	11	13	14	14	10	4	2	1	2	3	3	
February			12	5	5	5	3	3			1		3	2	
March			64	63	62	62	61	46	16	21	27	29	20	19	
April			54	55	46	52	45	49	22	22	33	30	27	20	
May			60	52	43	45	47	57	24	23	35	50	47	40	
June			84	84	80	79	80	123	21	30	27	33	29	36	
Total			662	587	533	564	557	601	208	251	313	555	330	307	

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* Also 24 additional lifts for dredging for submarine cable.

BUREAU OF RIVERS AND LAKES CONTROL.

W. G. Potter, *Chief.*

The report for this Bureau for the year ending June 30th, 1936 is as follows.

Seventeen inspection districts have been maintained in the State during the year under the supervision of three District Engineers with headquarters at Chicago, Springfield and Carbondale. During the year the territories of the various inspectors were changed so that the boundary lines, instead of being watershed lines, would be county lines in all cases regardless of watersheds. By this arrangement some duplication of work was avoided and territories were much more definitely indicated.

Northern District with headquarters at Chicago.

This District was in charge of Walter M. Smith, Jr. as District Engineer until August 1st, 1935 at which time he resigned from the service. The position was filled by the promotion of Mr. Louis E. Alswede.

Seven Inspection Districts are under this District Engineer covering Lake Michigan Shore Line, the Chicago, Calumet, Fox, DesPlaines, Kankakee, Rock and part of the Illinois Rivers, with their various tributaries.

In addition to the supervision of the work of the inspectors and investigators in regard to application for permits, complaints etc., the following surveys were made by the Northern District:

1. Surveys were made of the Turtle Creek at South Beloit, Fox River in Elgin, Kilbuck Creek at Rockford, Bull Creek and Butler Lake at Libertyville, Channels in Fox Chain of Lakes, Little Calumet River in Thornton Township, Cook County, Little Rock Creek near Plano, and East Fork DuPage River in Lisle Township, DuPage County. Plats showing the results of these surveys were prepared and rendered to interested parties.
2. The following contracts were handled:
    (a) The removal of a sunken schooner from Stetson's Canal on the South Branch of the Chicago River.
    (b) Weed cutting in the channels of the Fox Chain of Lakes. (August and September, 1935)
    (c) Dredging in the channels of the Fox Chain of Lakes. This contract was awarded in December, 1935, operations were begun April 15, 1936, and at this writing the contract is 50% complete.
3. A WPA application with the Division of Waterways as sponsor was prepared, submitted and approved for the removal of a rock ledge containing 7500 cu. yds. from the bed of the Little Calumet River at Roll Ave., Blue Island, and the construction of

retaining walls with the excavated rock. The project was made operative in February 1936, and at this time is 25% complete. Work was suspended temporarily on June 4 because of lack of funds, but was resumed June 17th.

4. A WPA application, with the Division of Waterways as sponsor, was prepared and submitted for the deepening and widening of the Little Calumet River from the Illinois-Indiana State Line westward 4 miles to the mouth of Thorn Creek in Cook County. Preliminary surveys were made, easements were drawn, and signatures to same by owners or their agents of 32 out of 38 affected tracts of land threaded by the stream have been secured. The project has been approved this month by Presidential letter, and when the necessary funds are allocated and released by the Federal Comptroller, the project will be put into operation. Contingent upon this is a similar WPA project, already approved, on the Little Calumet River on the Indiana side of the State Line.

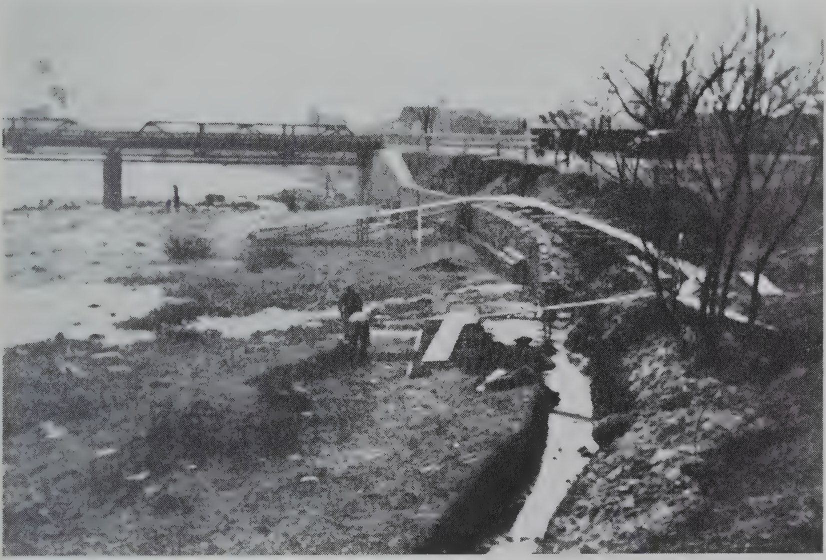

Figure No. 5. Showing a portion of the retaining wall being laid up on the North bank of the Little Calumet River, on the East side of the Roll Ave. Bridge.

5. A precedent was established in the collection of royalties from individuals and corporations for the removal of sand and gravel from the bed of Lake Michigan. A permit was granted in December, 1935, to a Material Company at Winthrop Harbor, Lake County, Illinois, for the dredging of sand and gravel from the Lake bed adjacent to the shore line. The permit calls for a royalty of 6c per cu. yd. sold of this dredged material. This royalty in the month of May, 1936, amounted to $52.44, but more important than the amount realized is the principle that has been established.

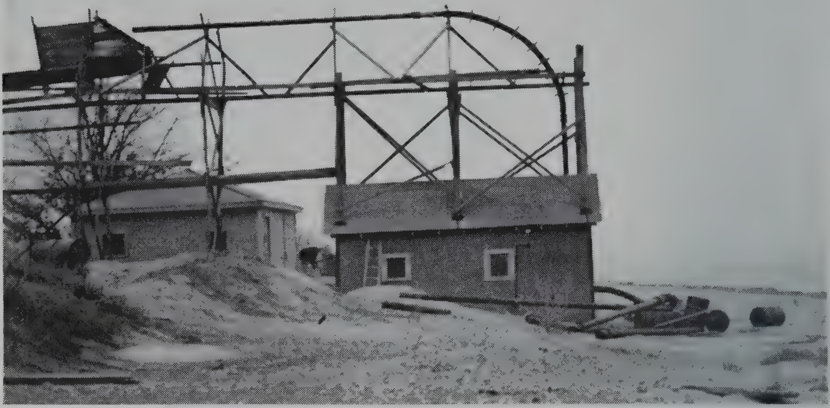

Figure No. 6. Gravel washing plant at Winthrop Harbor on Lake Michigan.

6. Also under WPA authorization, work is now going on in the Kankakee River at Momence in cleaning out debris and loose rock from the north channel, constructing a dam at the west end of this channel from north bank to the island and constructing stone walls on each bank, the object being to prevent the usual growth of weeds and the stagnant water and to make a better setting for the adjacent Island Park.

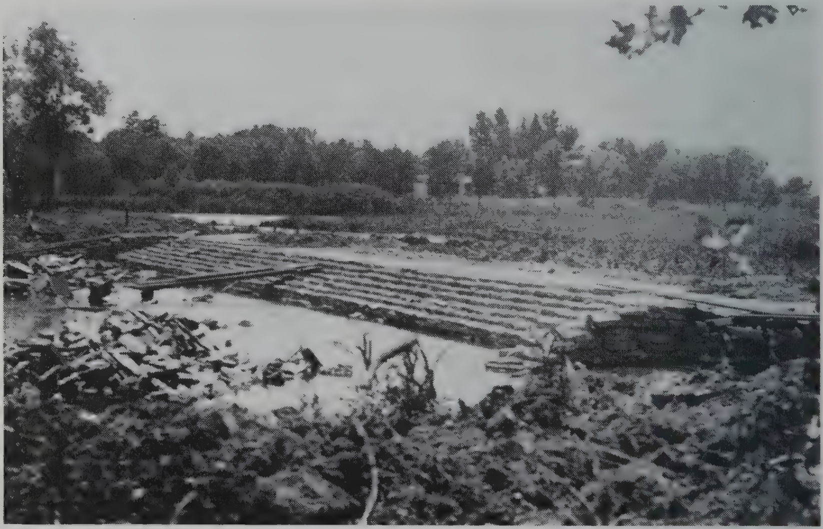

Figure No. 7. View of upstream or East side of the recently constructed rock dam across the lower end of the north channel of the Kankakee River at Momence, Ill. One more tier of stone is yet to be placed on the crest of this dam.

Pictures Nos. 3 and 4 show this channel with wall construction and no water in channel during construction period.

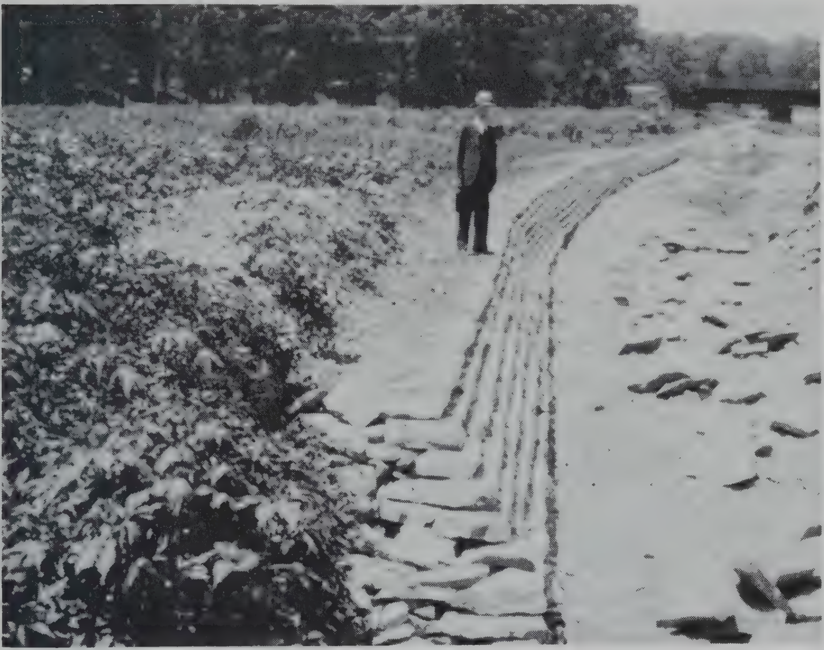

Figure No. 8. Picture showing the riprapping of the South wall of the North channel of the Kankakee River at Momence.

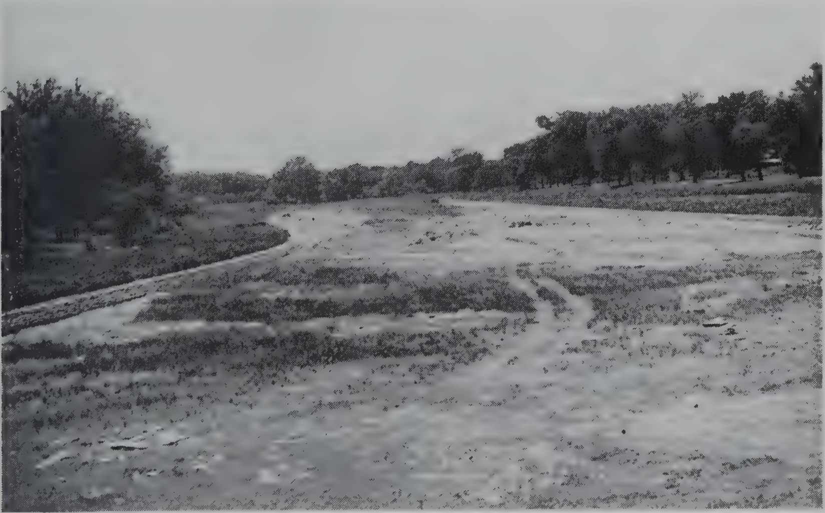

Figure No. 9. View showing the dewatered North channel of the Kankakee River at Momence looking downstream from the C. & E. I. R. R. Bridge. Note the riprapping of the banks.

Under WPA authorization much progress has been made in the construction of the Island Park at Batavia, and this, when completed will be one of the beauty spots in the Fox River. It consists of the union of two islands connected with each other and with both main shores of the river by suspension bridges. All shore lines are nicely protected by stone shore walls, the islands are landscaped with shelters, play grounds, etc.

At the Herrington Island Park in the Fox River at Geneva, great improvements are also being made by WPA consisting of rubble shore walls, improvement of the east river channel, etc.

Similar work is being done at Walton Island at Elgin where the channels are being cleared and deepened, island landscaped and a bridge being constructed from the island to Chicago Street bridge. Also a bridge has been built connecting the island with the main land near the upper end.

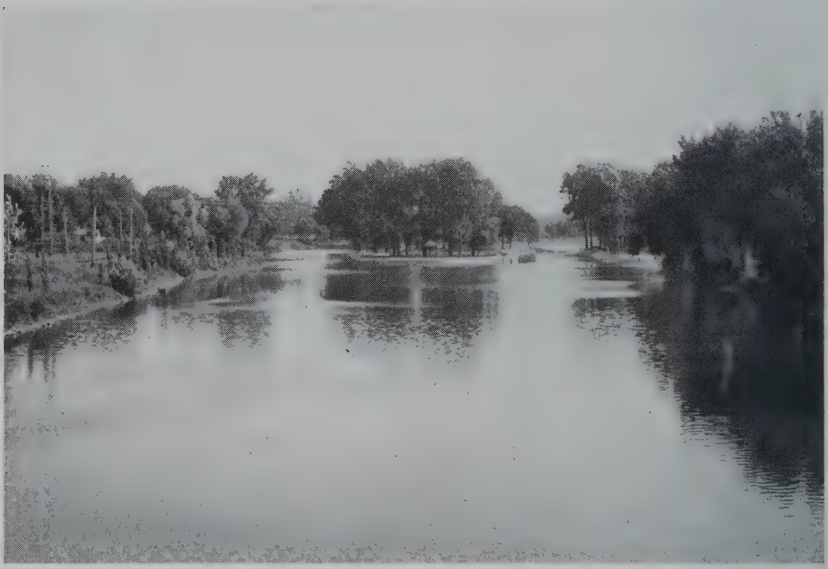

Figure No. 10. Batavia Island in the Fox River looking South from the Highway bridge at Batavia.

CENTRAL DISTRICT.

This district, with headquarters in Springfield, was in charge of the Chief of the Bureau until September 1, 1935. At that time, Mr. T. B. Casey, formerly engineer for the Illinois Water Terminal at Chicago, was made district engineer and also placed in charge of Flood Relief work.

As the work of inspecting and regulating the use of streams in the six sections of the Central District is of comparatively recent origin, the pioneer work of establishing this State service has progressed in the past year. Many complaints of obstructions, and abuses of the stream were received and amicably adjusted. The mission of instructing the public that permits were necessary before the flow of streams could be altered or interfered with was carried on with satisfactory results.

WORKS PROGRESS ADMINISTRATION.

Originally under the Illinois Emergency Relief Commission two Transient Service Camps were established in this district, one at Kilbourn and the other at Mound Lake. Upon reorganization of the Federal Government's relief program both camps were transferred to the Works Progress Administration. It was the function of the Division of Waterways to cooperate with these agencies in providing work projects of public benefit.

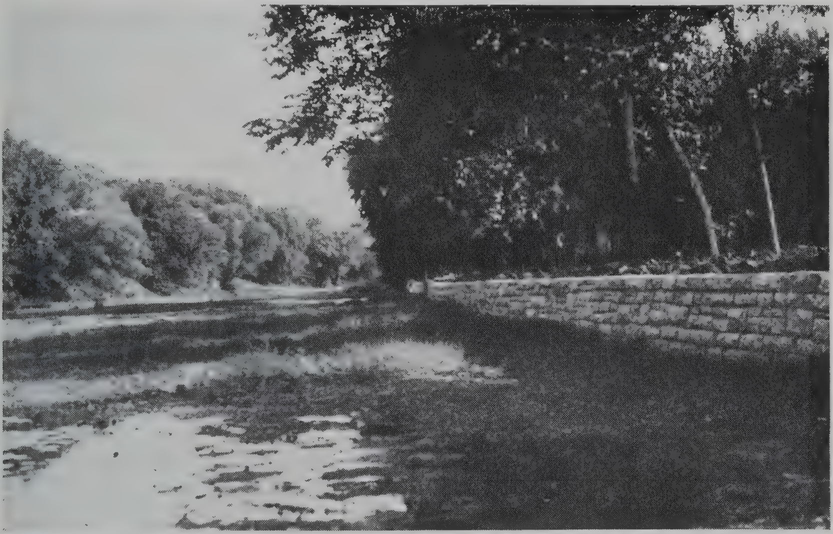

Figure No. 11. Showing the dewatered channel of the Fox River at the North end of Harrington Island in the city of Geneva. Note the recently laid stone retaining wall along the East side of the island.

The camp at Kilbourn was located close to the Sangamon River bottoms in order to clean out the brush, and debris on the overflow banks for the purpose of providing an unobstructed floodway for flood relief.

Because of the time consumed in organizing and building the camps and the frequent reorganization of the agencies only a half mile of river bank was cleared.

The camp at Mound Lake was located near the mouth of the Sangamon River for the purpose of clearing some four miles of drift which was lodged at this point, and diverting the river from its natural channel and causing it to outlet through Crane Lake. The river is now depositing silt in this Lake and gradually filling it up. In order to stop this filling of Crane Lake it was planned to remove the drift and turn the river back to its natural channel.

Like the work at the Kilbourn Camp the frequent reorganization of the agencies of the Federal Government hampered progress and very little work was accomplished on the river.

Both of these camps were finally abandoned in the Spring of this year.

CIVILIAN CONSERVATION CORP.

A number of permits were issued to the Drainage and Levee Districts along the Illinois River for the purpose of allowing them to improve and maintain their levees and ditches with the aid of help extended to them through the Civilian Conservation Corp of the Federal Government.

The most notable of these projects is the one in Spring Lake Drainage and Levee District in Tazewell County. Through cooperation between the District and the Federal Government a CCC Camp was established with entire negro personnel to raise the level of this State owned Lake which lies wholly within the Spring Lake Drainage and Levee District. The Lake is confined within a system of levees eight miles in length. The improvement contemplates raising these levees and providing a new spillway at the outlet. By raising the level of the water an objectionable marine growth in the now shallow lake will be eliminated and the fishing and recreational features of the lake greatly improved. In order to provide the volume of water necessary to maintain the new pool level it is planned to run a siphon from the Illinois River to the lake to insure a supply of water at all times.

This district has had frequent inspection trips made to this project for the purpose of insuring that the State's interests were not violated.

SOUTHERN DISTRICT.

This District with four inspectors is under the supervision of District Engineer, E. D. Dewey, with headquarters at Carbondale.

This work done in the Southern District during the current fiscal year in addition to the usual inspections is as follows:

INSPECTIONS AND REPORTS.

Investigated and reported on the dangerous condition of levees in the Vandalia Levee and Drainage District, Fayette County. Investigated complaint and suggested changes in plans of reservoir at New Baden to be constructed by George Hogg. Complaint was settled satisfactorily to all interested parties. Investigated and reported on proposed channel change in Stonefort Creek at entrance to Giant City State Park. Investigated and reported on request of Chas. C. Guth, Hartford, to pump sand from Chouteau Slough, Madison County. Investigated and reported on two small breaks in levee of the Miller Pond Levee and Drainage District, Union County. Investigated and reported on proposed channel change on Dutchmans Creek in Johnson County. Report on Flood Control Meeting held at U. S. Engineers Office, Memphis, Tennessee. Investigated, reported on and made preliminary arrangements for removal of old R. R. Bridge in channel of Embarrass River at St. Marie, Jasper County. Assisted in supervising construction of earth dam in City Park at Greenville, Bond County. Inspection of various projects under construction for which permits were issued.

FLOOD RELIEF REPORTS AND CONSTRUCTION.

In connection with the allotting of funds for Flood Relief appropriated by the General Assembly numerous reports on physical and financial data of the various Districts have been made for the Flood Relief Engineer, Mr. Casey.

To date two allotments for levee construction and repairs have been made in this District from the Flood Relief Fund namely, Vandalia Levee and Drainage District, Fayette County, and Miller Pond Drainage and Levee District, Union County.

The allotment of $4,127.00 to Vandalia Levee and Drainage district was used to construct 3 loop or ring levees around the three weak and dangerous places in their levee as reported earlier by this office. This work was done under contract by Dees Brothers, Shobonier, 27,698 cubic yards of material was placed at price of 14.9 cents per cubic yard. This work was started on October 11, 1935 and completed January 16, 1936.

The allotment of $600.80 to Miller Pond Drainage and Levee District was made on the basis of State contributing two-thirds and the District contributing one-third of an estimated cost of $901.20 to repair the two small breaks in their levee along Clear Creek Diversion Channel. In this case the District elected to do the work by day labor and the cost of the completed work was considerably higher than the estimate. The State contributed the $600.80 as originally agreed toward the cost of the work.

Another allotment of $10,500.00 has since been made to the Cairo Drainage District to help them defray expenses in connection with enlarging of the Mississippi River Levee of this District by the U. S. Engineers.

TRANSIENT SERVICE RELIEF WORK CAMPS.

W. P. A. WORK CAMPS.

During the preceding year the I.E.R.C. constructed a work camp near Ullin, Alexander County, in connection with the Transient Relief program. This camp was of 250 man capacity. The men were placed at work on the project of clearing and cleaning the channel of Mill Creek from its mouth to a point near the Village of Mill Creek, on July 1st.

Later it was decided to place two additional camps of 500 man capacity each in this district along the Cache River and enlarge the program of work to include the entire Cache River and its tributaries. Some delay was experienced in completing the last two camps and no work was done on the project by these camps until late in the winter of 1935. In November of that year when everything was ready for men to start work on the project it was decided to place the camps under WPA instead of IERC, with the Division of Waterways as sponsor of the project work on the improvement of Cache River and its tributaries. When the Division of Waterways could get no satisfaction from the WPA authorities regarding employing competent men to direct the project work the Division withdrew sponsorship of the camps and new sponsor was obtained after considerable trouble and delay. The present sponsor is the Cache River Drainage District.

Following is the amount of work completed by each camp while under Division of Waterways sponsorship and that completed from that date to present time.

Ullin Camp #1 Division of Waterways Sponsorship to March 5, 1936.
Mill Creek Cutoff—3500 cu. yds. excavation.
Mill Creek Clearing—4 miles—32 acres.
Mill Creek Cleaning of logs and debris from channel—2 miles.
Wetaug Ditch Clearing—2½ miles—10 acres.
Drainage Ditches #1 & 2—6 miles—21½ acres.
Brier Creek Clearing—5½ miles—19½ acres.
Under Cache River Sponsorship since March 5th to date.
Mill Creek Clearing—2 miles—16 acres.
Mill Creek Cleaning—1½ miles.

Karnak Camp #2.

Work completed to March 5, 1936.

Burlington Ditch Clearing—3½ miles—15 acres.
Post Creek Cutoff Clearing—1 mile—15 acres.

Work completed since March 5, 1936.

Post Creek Cutoff—5½ miles—50 acres cleared.
Burlington Ditch 1595 cu. yds. excavation.

Cache Camp #3 (Colored).

Work completed to March 5, 1936.

Cache River clearing—8 miles partially cleared but not completed because of highwater.

Lake Creek Clearing—3 miles.

Work completed since March 5, 1936.

Reconstruction of one mile of levee near Miller City—4000 cu. yds. placed by hand.
Riprapped river side of the above levee with willow mat.
Cache River Clearing—completed 18 acres.

The average daily man power on the project at each camp during the above work was as follows:

Ullin	120 men
Karnak	70 men
Cache	210 men

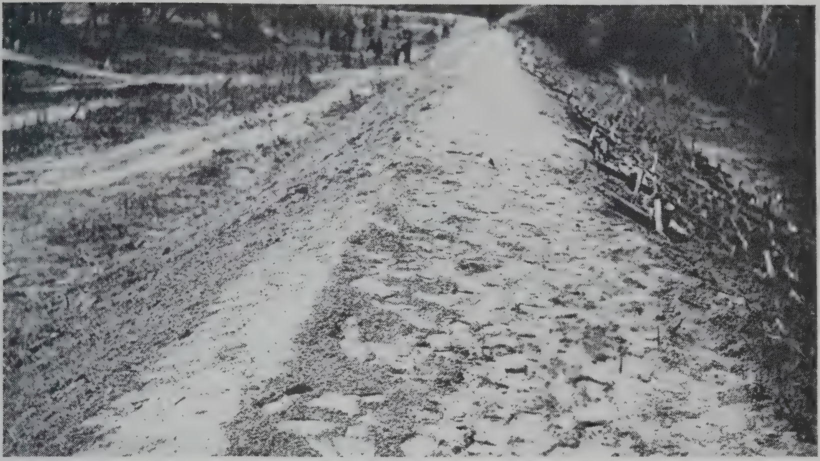

Figure No. 12. View showing the riprap placed on the water side of the Miller City Levee to prevent erosion.

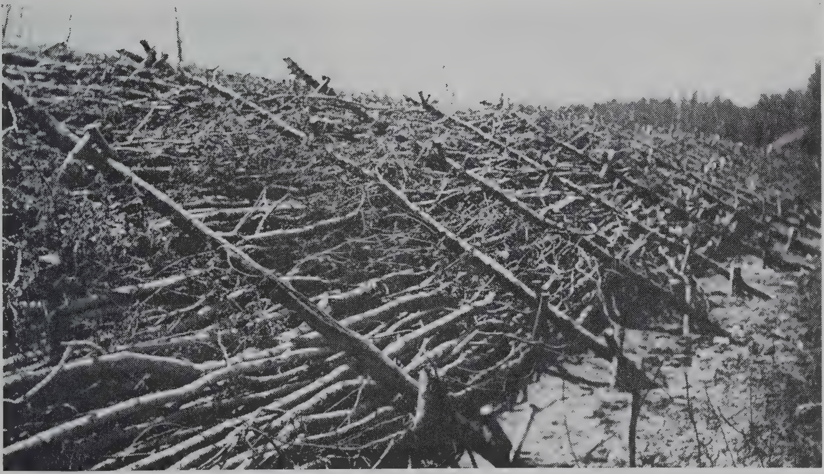

Figure No. 13. Another view showing the riprap placed on the Miller City Levee.

Under the present sponsorship and method of handling the work projects the Cache River Drainage District submits an application for permit on any proposed project for the approval of the Division of Waterways before any work is started on the project. Should the WPA Camps continue in operation after July 1st the Drainage District have a number of good projects to be proposed and have only held off for the present as they did not want to start same until assured of completion. Our latest information from WPA authorities is that Ullin and Karnak camps will be abandoned but that the Cache Camp for colored men will be maintained.

SUMMARY.

It has been noticed by the writer that the continued visits of the Inspectors over their districts has increased the number of applications for permits on various kinds of waterway construction and it is hoped that within the near future all City, County and Industrial interests will be sufficiently informed as to the requirements of obtaining a permit before any construction is attempted in connection with the waterways that they will automatically submit plans for approval of the Division without the necessity of Inspectors having to ask for same.

The work camps located on the Improvement of Cache River and Tributaries have materially improved the condition of the channel of that part of the main stream and smaller streams on which work has been completed and if the camps are continued after July so as to be able to complete the project this stream should be in the best condition for flood relief that it is possible to have without an extensive program of straightening and widening.

REPORT OF OHIO RIVER FLOOD IN APRIL 1936.

During the extreme hard winter just past the extra heavy snow and extreme cold temperatures over the Northern and Northeastern portion of the United States placed the Mississippi Valley in an ideal position for a Spring flood equal to the disastrous floods of 1913 and 1927.

Some anxiety was felt for the lower portion of the Mississippi Valley should the thaw up of this snow and ice occur over both the Mississippi and Ohio River watersheds at about the same time. All precautions were taken along the lower section of these streams to protect the lives and property that would be endangered should the expected flood occur.

During the first part of March exceedingly heavy rains over the Eastern part of the United States caused serious floods from Maine to the Carolinas. These heavy rain storms gradually extended over the divide and into the upper watersheds of the Ohio River. As early as the 15th of March serious floods had occurred on smaller streams above Pittsburgh with extremely heavy losses of life and property. Numerous small towns along these streams were practically wiped out.

When the crest of this flood was reached at Pittsburgh the water was some feet higher than ever before and millions of dollars damage was done in the business section of the city with many lives lost. This was reported to be the worst flood in the history of this city located where floods are a yearly occurrence.

While the flood waters continued to raise in the vicinity of Pittsburgh the lower river towns and communities continued to prepare for possibly the worst flood in their history. About this time the rain and wind storm area shifted to the southern states of Georgia, Alabama, Carolina and Tennessee removing temporarily the danger of the fast thawing out of the Upper Mississippi and Missouri River watersheds and consequently delaying the arrival of high stages on these rivers. At the time serious flood stages on the Ohio were being felt at Cincinnati and along the stream to Cairo the Mississippi at St. Louis was low and no extreme danger was expected in this territory. Large areas of bottom lands along the Ohio were over-flowed where no protection was afforded but wherever levees had been constructed for protection of these low lands no overflow occurred except for some low lands inside of the Districts where rain and seep water was ponded for storage until river fell sufficiently to allow same to be discharged back into the river.

As the Mississippi continued to fall at St. Louis all during the crest stages in lower Ohio River it afforded an outlet at Cairo for the excess waters and although a stage of 52.8 was reached at Cairo, at no time was any anxiety felt toward the levees and protection works in that territory. The stage of 52.0 feet was reached at Cairo on April 7th and the river was expected to begin falling immediately but heavy rains and windstorms over the Tennessee Valley caused a tendency for the stage at Cairo to raise slowly until 52.8 was reached on April 16th.

The Ohio began falling at Cairo on April 17th at the rate of one-tenth of a foot each 24 hours and gradually increased in rate until now it fell at the rate of one foot or more in 24 hours. All danger of a disastrous flood in this territory seems to be over for the present.

It is impossible to forecast what the conditions would have been had the rain storms of the early part of March extended over the Mississippi and Missouri watersheds. At no time during the present emergency did the Mississippi contribute any water toward the stages recorded but assisted in lessening same on lower reaches of the Ohio and Mississippi because of its tendency to fall at all points during the period of flood danger.

Several towns along the Ohio River in this territory which have no protecting levees were affected by the highwater flooding the buildings along the river fronts causing families to have to abandon their home and business houses for a period of time. Those affected in this way were Golconda, Metropolis and Joppa. As the U. S. Engineers have reconstructed the levee around City of Shawneetown up to standard as to height and cross section no damage was done here with exception of inconvenience caused by rain and seep water ponded within low ground on the West side of the town causing some families to have to travel to and from higher ground by boat. Also since the 1927 flood the U. S. Engineers have reconstructed all levee around the City of Cairo and Cairo Drainage District making it practically impregnable to any expected flood. By increasing the cross section of the earth portion of these levees and the driving of steel sheet piling in weak points of the amount of seep water inside of this area has been greatly reducd with accompanying improvement of conditions in the low lands inside of the levees.

As a great deal of the snow and ice in the Upper Mississippi and Missouri Rivers has not started to thaw out as yet, it is almost certain that a June raise over the lower Mississippi Valley will cause some trouble. The amount of damage caused by this expected rise will more or less be affected by the stages along lower Ohio River. Should the Ohio recede sufficiently to have a low stage by the time this upper Mississippi water reaches St. Louis no great damage will be done but should the lower Ohio remain above 40 feet until the upper Mississippi water reaches this territory there will be considerable trouble experienced with the levees along the Mississippi from Alton to Cairo.

With the exception of City of Cairo and the Cairo Drainage District none of the existing levees along the Mississippi are up to Mississippi River Commission Standards as to height and cross section. In past high stages numerous low places and weak points have given serious trouble and will continue so until same are reconstructed to standards set by the Commission.

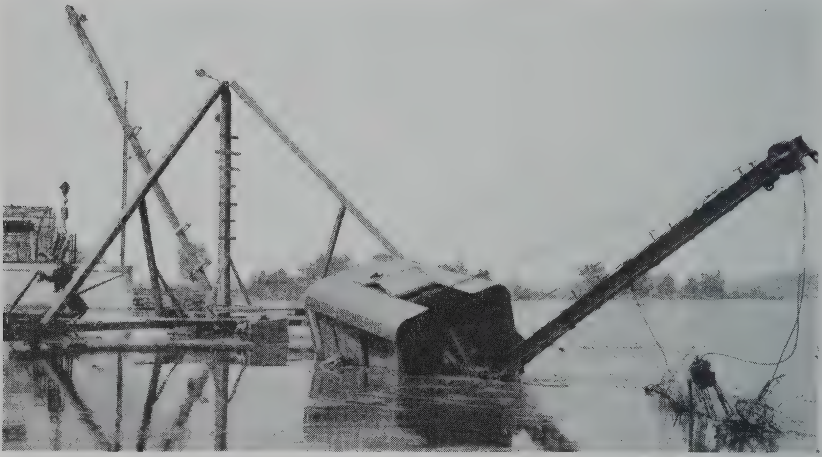

Figure No. 14.

GENERAL INFORMATION.

Weather Conditions.

The current fiscal year began with very heavy torrential rains in several parts of the State which amounted practically to local cloud bursts.

On the Rock River on July 3rd a rain of this description raised the river to flood heights in several places with consequent damage to farm lands and crops. At Prophetstown a view is shown of flooded conditions at the State Highway bridge under construction.

At Quincy a similar rain amounting to 1.23 inches in one hour occurred on July 1, 1935, causing high water and flooding of small streams and drainage district lands.

On the Illinois River similar rains caused considerable damage to crops about the same time.

At Gardner a serious overflow which occurred in June of the previous fiscal year was caused by a local cloud burst, and in July a report was made by the Division in regard to the cause of the overflow.

During the past winter which was one of the coldest and most severe for many years, the ice froze in all streams to extreme thickness. This, together with the very heavy snow remaining on the ground caused a general fear of great floods and overflow damages on the breaking up of the ice.

Preparations were made by this Division, by the U. S. War Department, and by WPA authorities for immediate action in case of serious trouble. However, as the breakup came slowly and without heavy rains, this trouble did not materialize. Some damages of minor amounts resulted along the Illinois River but as the Mississippi remained at a fairly low stage no serious trouble resulted.

On the Ohio river great fear was felt after the tremendous record flood at Pittsburgh and the East, but this again failed of realization. Before reaching Illinois, the flood wave had gradually levelled off, and assisted by the low stage of the Mississippi very little damage occurred. At Cairo the high stage of the flood was 52.8 feet, nearly five feet below record stage. Some minor damage was done at unprotected towns like Metropolis and Golconda where the streets along the river front were under water to some extent. Herewith are two views at Golconda.

In one showing a large brick building, three tablets may be seen. The highest tablet shows the high water of 1913, the next shows that of 1884 and the low one shows 1883.

The high stage of this year was about 8 inches above the water shown in the view so that it can be compared with the previous high waters.

During 1936 from January to May inclusive, the rain fall has been very low, amounting only to about 37% of the normal. This, assisted by the hot weather in May, which, according to the U. S. Weather Bureau, was the warmest May in 25 years excepting in 1934, has made all streams very low. If continued through the harvesting season, the effect on crops will be very noticeable and very disastrous.

Complaint of Mr. Sebe Kilker against McGrath Sand & Gravel Co.

This gravel company owns and operates a gravel plant at Forreston. Complaint was made by Mr. Kilker that the water from the Gravel Company pond seeps through into his land and water logs part of it enough to destroy it for agriculture.

Investigation was made of this complaint by the writer, and it was found to be true on a small part of the Kilker land.

The Gravel Company was advised to compensate Mr. Kilker for damage to his land, and a very amicable agreement followed between the two parties.

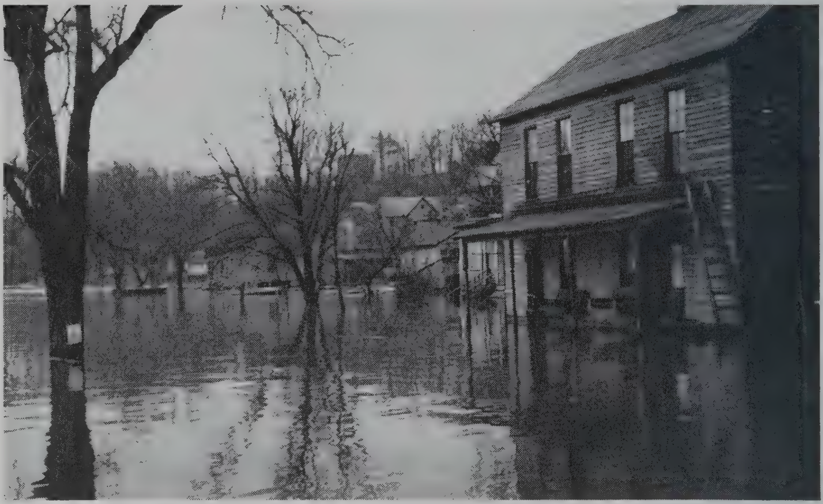

Figure No. 15.

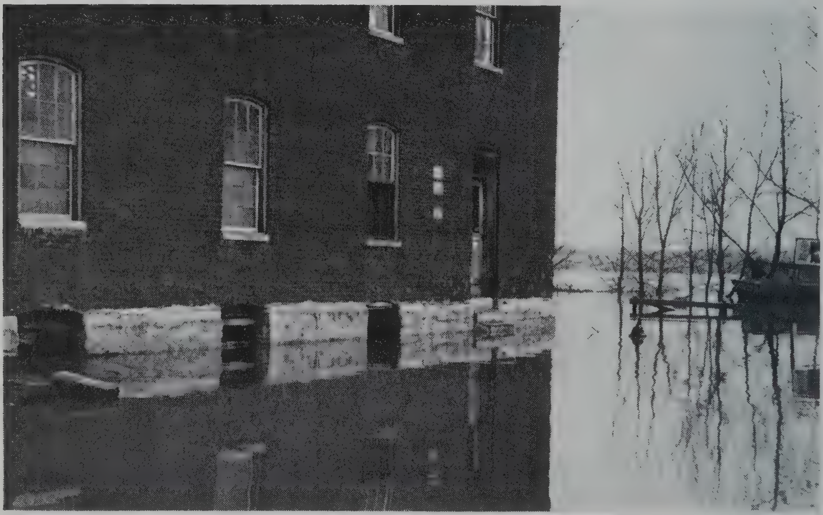

Figure No. 16.

While making this investigation, the writer noticed that a very large amount of sand was being carried down from the gravel washing plant into the head waters of Leaf River, which empties into the Rock. It was suggested to the Gravel Company that they build a settling basin with baffle board and weir in order to prevent this sand from passing into the stream.

The Gravel Company at once agreed to this and the settling basin was built according to a sketch plan made by the writer.

Numerous inspection trips have been made by the Chief to various parts of the State in company with the Chief Engineer, the District Engineers or Inspectors in regard to the many problems arising.

Office correspondence is continually increasing and much time is necessarily consumed with permits and applications for permits. With the education of the Inspectors and of the general public, as to the necessity of obtaining permits for any work in streams and lakes of the State, the progress along this line has been great, as will be shown by the total number of permits issued during the year. This list now follows:

Bridges	71
Docks	32
Transmission lines	15
Ditches, dredging, clearing and cleaning	44
Filling	7
Dams	19
Water intakes and pipe under crossings	20
Piers	17
Sewer outfalls	42
Shore walls	31
Piling	5
Miscellaneous	4
Total formal permits	307
Informal permits to Highway Division of weekly lists	268
Total permits	577

Compared with the record for the year ending June 30, 1935, it shows as follows:

Permits	1936	1935
Formal	307	180
Informal	268	316
Total	577	496

The showing here made of an increase of 127 formal permits is an index of the improved inspection service and also of the improvement of general financial conditions of the people of the State.

FLOOD RELIEF.

Under two appropriations of the 59th General Assembly to the Department of Public Works and Buildings, funds became available for flood relief throughout the State. The Division of Waterways was assigned the task of making studies to determine the best manner of expending these funds. As a result the following reports were prepared and submitted.

Report on Applications for Aid in Flood Relief, Dated November 15, 1935.

South Beardstown Bottleneck, dated February 6, 1936.

Report on the Drainage and Levee Districts in the Illinois, Mississippi, Ohio and Wabash River Valleys, dated April 15, 1936.

In compliance with the applications received by this office for State Aid in Flood Relief the following projects were studied and plans prepared for their construction:

- Channel change in Big Creek near Ullin, Illinois.
- Levee Repairs for the Pekin and LaMarsh Drainage and Levee District.
- Repair of Levee breaks in the Miller Pond Drainage and Levee District.
- Emergency Repairs in the Levees of the Vandalia Drainage and Levee District.

A number of emergencies arose for which relief from floods were granted. These projects were completed under the supervision of this Division. The Cairo Drainage District needed funds to buy borrow pits and borrow pit rights in order to obtain help from the Federal Government in enlarging and raising their levee to obtain protection from floods. Consequently a grant of $10,500.00 was issued to them for this purpose. The Miller Pond Drainage and Levee District had two breaks in their levees which left this district as well as adjacent districts open to flood at a moderate high water stage. A sum of $600.80 was given to the District to help them repair these breaks. Vandalia Drainage and Levee District had three weak spots in their levee systems. Ring levees were proposed and built to strengthen these weaknesses and prevent many acres of cultivated land being inundated. All of these projects were completed and accepted by the State in the past year.

Under construction now is the dredging of boating channels in Fox Lake to provide sufficient depth for pleasure boats navigation. This work will be completed in a month and will enhance materially the recreational value of this chain of lakes.

STATE FUNDS AVAILABLE FOR FLOOD RELIEF.

Appropriation under House Bill 832 of the 59th General Assembly to Flood Relief and Rivers and Lakes Control		$500,000.00
Estimated cost of salaries, traveling expenses, etc. for Rivers and Lakes Control for the biennium		125,930.00
Money expended under contracts from the Flood Relief Funds:		
Cairo Drainage District	$10,500.00	
Miller Pond D. & L. District	600.80	
Vandalia D. & L. District	4,127.00	
Money obligated to projects but still unexpended from Flood Relief Funds:		
Dredging channels in Fox Lake	10,746.00	
South Beardstown D. & L. District	75,000.00	
		226,903.80
Balance not obligated or expended		$273,096.20
Refunds to Flood Relief Fund Illinois River by War Dept.	44,453.53	
Amount retained from Flood Relief Fund Illinois River by United States Government	1,603.00	46,256.53
Allotment of Reappropriated Funds to United States Government.		
Lost Creek and Hager Slough Drainage and Levee District	$34,000.00	
Hartwell Drainage and Levee District	10,500.00	
Contingency on above	1,756.83	
		$46,256.83

THE BUREAU OF SURVEYS AND INVESTIGATIONS.

FRANK S. BROWN, *Chief of Bureau.*

The Bureau of Surveys and Investigations was organized July 1, 1935, with headquarters in the Illinois and Michigan Canal office at Lockport. At that time the personnel of the Bureau consisted of a Chief, Instrumentman, Draftsman, two Rodmen, and a Recorder. Before the fiscal year was finished, however, another Rodman was added to the Bureau.

The duties of the Bureau are to make any surveys deemed necessary by the Division, and to continue the survey of the Illinois and Michigan Canal.

During this period, July 1, 1935, to July 1, 1936, the following work has been accomplished:

A survey of levees on the Kaskaskia river near Vandalia, Fayette County, was made in three places known as Bingham's Bend, Roe's Cabin, and at Route U. S. 51. An estimate was compiled on setting back and strengthening these levees, involving in all about 3,200 feet of new levee. On approval by the Division, the work was laid out by the Field party of the Bureau, and finished in December, 1935.

A complete survey of eight miles of levee in the Pekin-Lamarsh area, opposite Pekin in Peoria County, was made for the purpose of obtaining data for making an estimate on raising and strengthening the levee along the west side of the Illinois River. The estimate was made, but to date nothing has been done.

A similar survey was made farther up the Illinois River in Putnam County in the Hennepin Drainage and Levee District, and involves the reinforcing and raising of 10,000 feet of levee. This was situated on the east side of the river.

A topographical survey was made of the Kaskaskia River in Fayette County near Vandalia in three different places where the river is cutting its bank and washing away the levees, with the idea of determining a feasible method of straightening the river channel by means of cut-offs. The survey was platted, but no estimate of quantities made.

A similar survey was made and platted of Big Creek in Pulaski County, in which three miles of meandering creek could be converted into a half mile of dug channel.

A survey was made, an estimate compiled, and location established of a Cut-off in the Desplaines River for a W. P. A. Project between the city of Lockport and the Chicago Sanitary District channel in Will County. In this project considerable land would be redeemed by the State, but the cut would have to be made through solid rock, making the cost excessive.

A survey of the property transferred to the State by the Chicago Retort and Firebrick Company of Ottawa was made. This involved a meander of nearly two miles of the Fox River shoreline, and the location of an island in the river near this property. This included in all about one hundred acres, and will be utilized as a State park.

The land owned by the State and occupied by the National Fireproofing Company in Ottawa was surveyed with the view of leasing it to the city of Ottawa for a Dock-site, but plans failed to materialize. Since then a portion of this area has been leased to the Norris Grain Company of Chicago, upon which a grain elevator will be erected where barges can be loaded for transportation of grain on the Illinois Waterway.

A complete survey of the Fox River and adjoining lots at Aurora on Main Street in Kane County in the vicinity of the two dams at the island was made, with the view of the State acquiring the property on which the broken dam lies, and formulating plan for the erection of a new one.

A survey was made of the area flooded by a break in the Illinois and Michigan Canal in March, 1936. This break occurred just east of Seneca in Grundy County, and covered an area of two hundred and fifty acres of farm land on the south side of the canal.

A survey of the Nettle Creek aqueduct under the Illinois and Michigan Canal near Morris in Grundy County, was made to obtain necessary data needed to design a stone arch aqueduct to replace the present steel structure, which is in poor condition.

The Fox River Feeder to the Illinois and Michigan Canal between Ottawa and Dayton in LaSalle County was surveyed and the north reserve line monumented and later fenced by the CCC camp at Starved Rock, and is being used as a State park.

Small surveys were made on the Spoon River near Havana in Fulton County; of the McHenry lock and dam and access to it in McHenry County; or the Turning Basin in the Illinois and Michigan Canal at LaSalle-Peru in LaSalle County; sounding in the Illinois River at Starved Rock in LaSalle County; of the Havana and Utica bridges over the Illinois Waterway; check-up on the new bridges over the Illinois Waterway in Joliet, Will County and numerous surveys for new leases of State land.

In addition to the above work, the Bureau has continued the survey of the Illinois and Michigan Canal, and has extended a control line from Ashland avenue in Chicago to Seneca in LaSalle County, a distance of sixty miles. All encroachments and physical features adjacent to the Canal and on its reserves are being measured and platted, and to date about forty miles have been completed. The reserve lines of the Canal have been monumented from McKinley Woods to Channahon in Will County; in section 14, township 33, range 6, Grundy County, and along the Fox River Feeder in LaSalle County. The transit or control is also being monumented. These monuments or markers are of concrete 3¼ inches square and three feet long and contain a circular bronze plate upon which the inscriptions are stamped, and are being made by State institutions at Joliet and Pontiac.

In the first year of its operation, the Bureau has been so constantly employed, that it has been necessary to enlarge the personnel, in order to accomplish the work requested by the division.

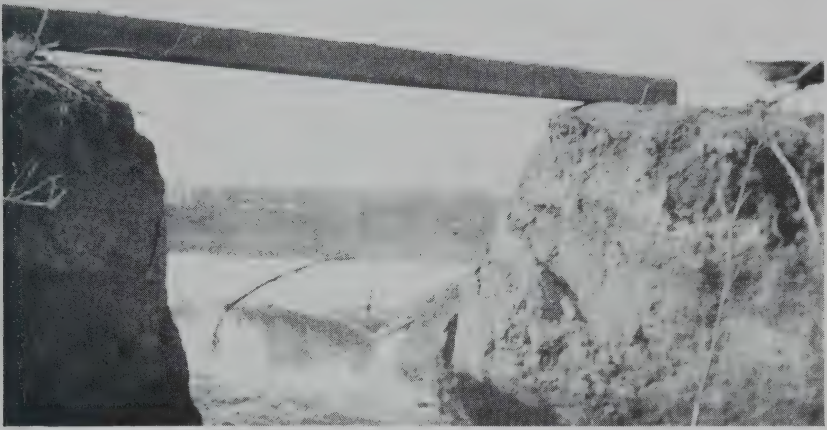

Figure No. 17. Showing break in Canal E. of Seneca in March 1936.

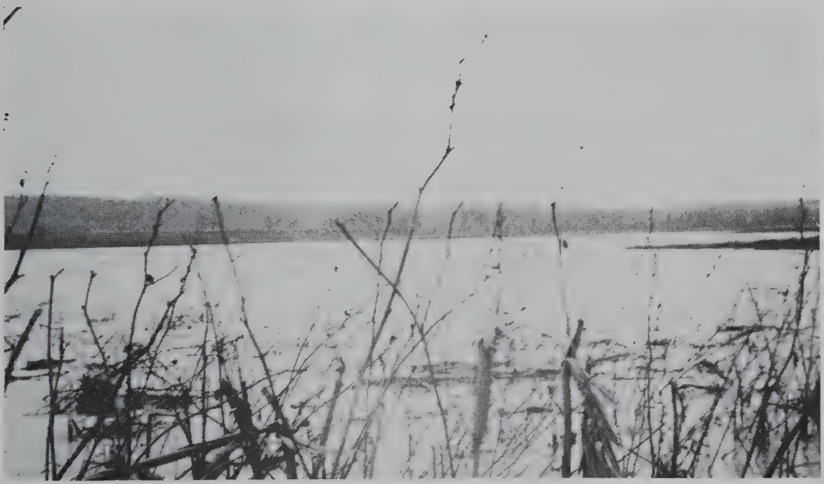

Figure No. 18. Flooded land due to break East of Seneca, taken March 3.

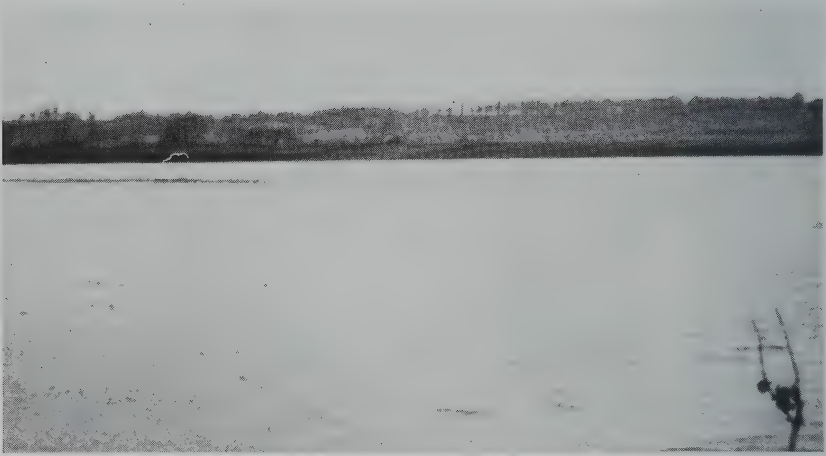

Figure No. 19. Flooded land due to break East of Seneca, taken March 3.

BUREAU OF ILLINOIS AND MICHIGAN CANAL.

V. D. Ehringer, *General Superintendent.*

The close of the fiscal year covered by this report is noteworthy in that it was just one hundred years ago that construction was started on the Illinois and Michigan Canal. The first shovel full of dirt was removed on July 4, 1836 and this event was the occasion for a big celebration by residents of Chicago. The Illinois Michigan Canal is 96.4 miles long, has a water width of sixty feet and a ninety foot reserve strip on each side for its entire length. All together there are approximately two thousand nine hundred acres of land belonging to the Illinois Michigan Canal.

The canal was completed and opened for navigation in 1848 and played an important part in the rapid development of Northern Illinois. For many years the canal was the most important transportation artery in the State, but after the railroads became more numerous, commerce on the canal gradually decreased until the present decade, when commercial navigation was entirely discontinued. The completion and opening in 1933 of the Illinois Deep Waterway, paralleling the Illinois Michigan Canal, makes it obvious that the Illinois Michigan Canal will only be used for pleasure navigation.

The present plan for utilizing the canal is to develop it into a parkway or recreational area and for the past three years, five and just recently reduced to three, CCC Camps have been busily engaged in this undertaking. The ancient existing canal structures, the heavily wooded banks and the presence of a considerable amount of wild life, are the factors which make this project worthwhile from a historical, natural history and recreational standpoint. Photographs of typical sections of the canal, which will be found later in this report, show the possibilities for recreational purposes.

The financial report for the present year shows a much improved condition over the previous year. The expenditures were $6,530.87 less and the receipts $3,915.13 greater, making a reduction of $10,446 in expenditures over receipts over the previous year. Continuing a policy of strict economy in operation and developing several potential sources of revenue it is very probable that the canal will again balance its budget within the next few years. Included in the expenditures of the past year is the sum of $992.50 which represents damage claims paid for flooding of adjacent land due to a break in the canal bank.

During the past year, one bridge, three water pipe, ten land and four land and house leases were executed and negotiations are under way for fifteen more leases at the time this report is written. Settlement for arrears was made with the American Steel and Wire Company, The Illinois Power and Light Corporation and the Thomas Manley Estate.

Labor and material was furnished by the I. E. R. C. for repairing the roof of the canal office, the Jackson Street Locktender house in Joliet, and the garage and storage building at Lockport. All of these structures were put in fair condition with the assistance of the relief organization.

Three laborers were employed at Ottawa, Illinois, from January through April. These men were used to cut ice, clean debris from the canal, cut weeds and other miscellaneous work. The canal dredge boat, quarter boat and a quantity of surplus tools was delivered to the Transient Work Camp near Kilbourne, Illinois where they were to be used in cleaning up the Sangamon River.

On February 27th, a break occurred in the bank of the Illinois Michigan Canal about three miles east of Seneca and approximately two hundred acres of adjacent ground were flooded. The thaw starting February 25th coupled with ice jams resulted in an extremely high water stage and caused the water to flow over the banks in a number of places. The CCC Camp at Illini Park, Marseilles, repaired the break as soon as weather conditions permitted them to reach it. The break was closed with steel sheet piling and then filled. The roof of a culvert three miles west of Marseilles partially collapsed in May and the repair work was also done by the Marseilles CCC Camp.

Figure No. 20. Minooka wide water.

The survey party from the Bureau of Surveys and Investigations has been working intermittently on a new survey of the Illinois Michigan Canal. They have now run a transit line for approximately 80% of the length of the canal and have re-run the original survey lines in several sections and have tied canal property in with the section corners, and monumented it with permanent concrete monuments.

A series of photographs follow, before referred to showing the I. M. Canal and the results of CCC activities along the Canal.

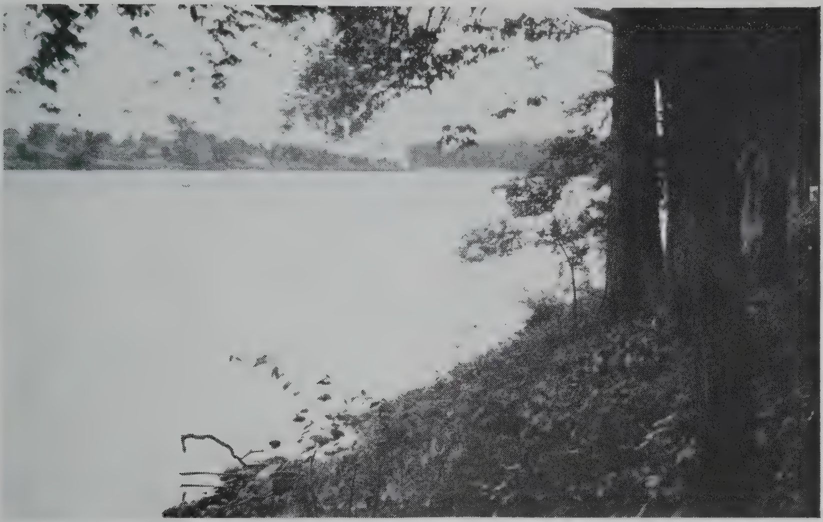

Figure No. 21. Minooka wide water.

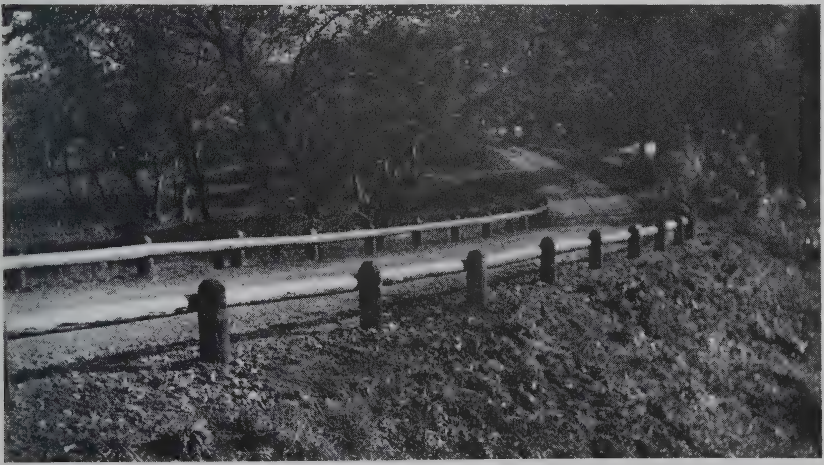

Figure No. 22. Entrance to Tote Road from U. S. Route 6 at Channahon.

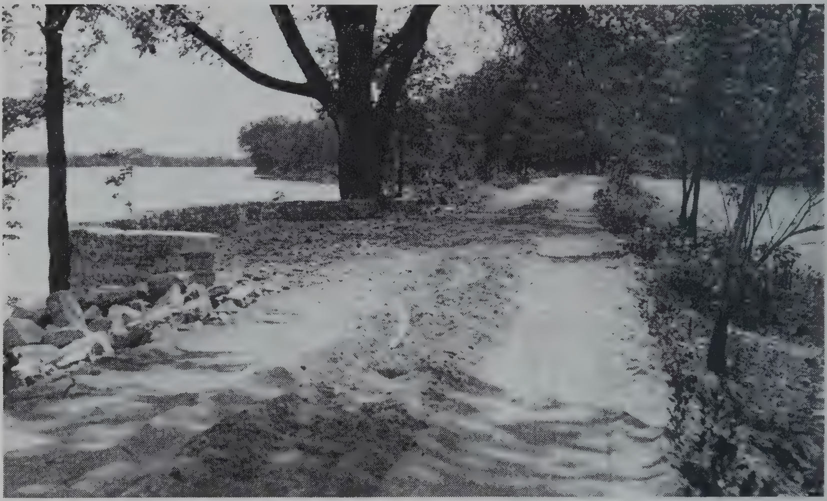

Figure No. 23. Turnout in Tote Road between Channahon and McKinley Woods.

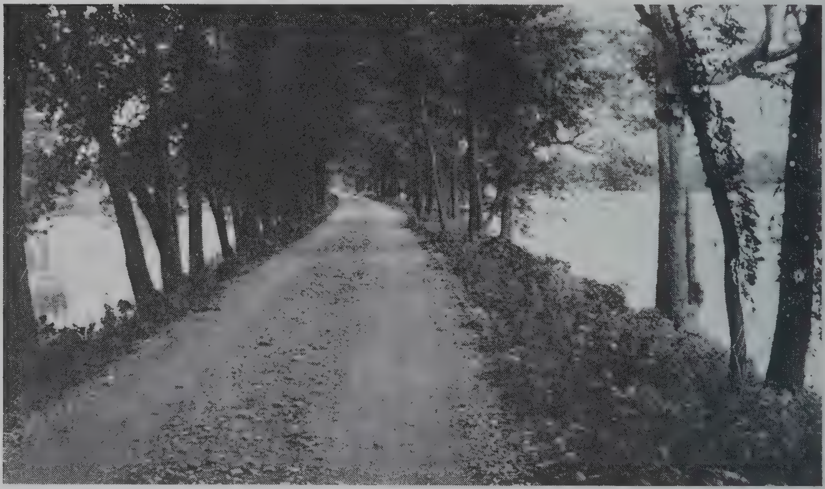

Figure No. 24. Tote Road between McKinley Woods and Dresden.

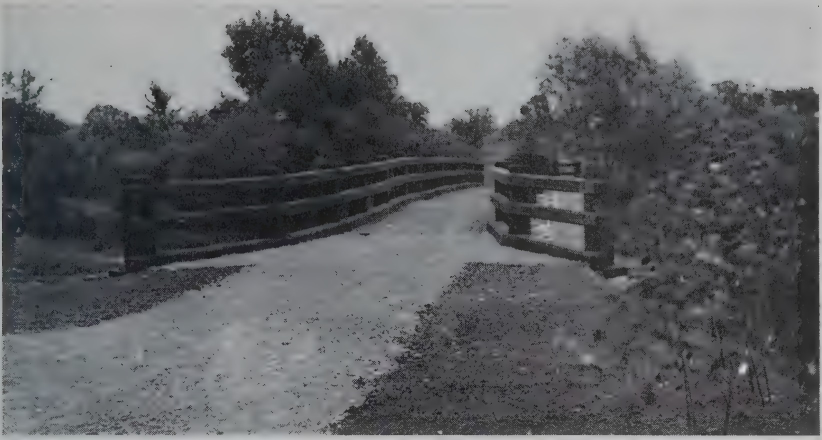

Figure No. 25. Foot trail leading to picnic shelter at Channahon.

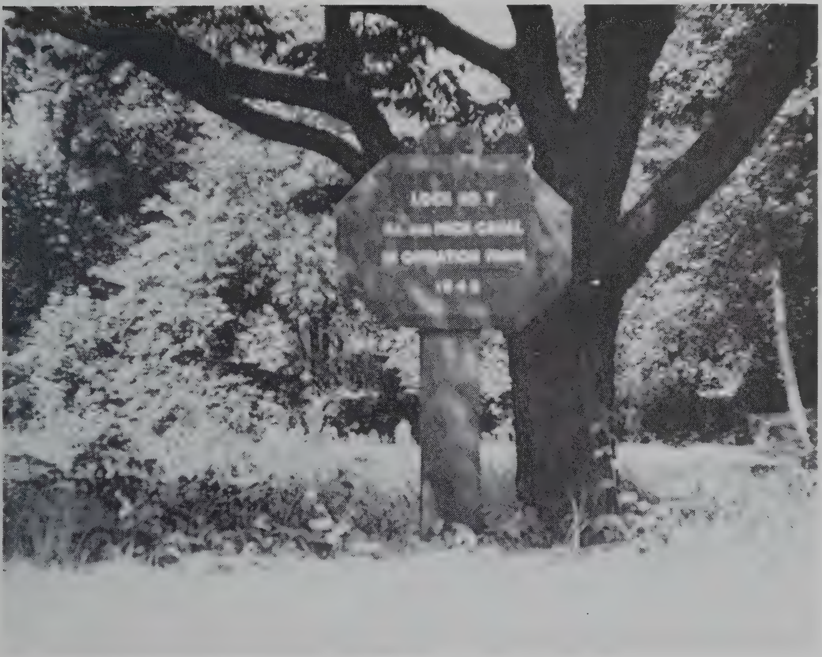

Figure No. 26. Rustic sign at Lock No. 7.

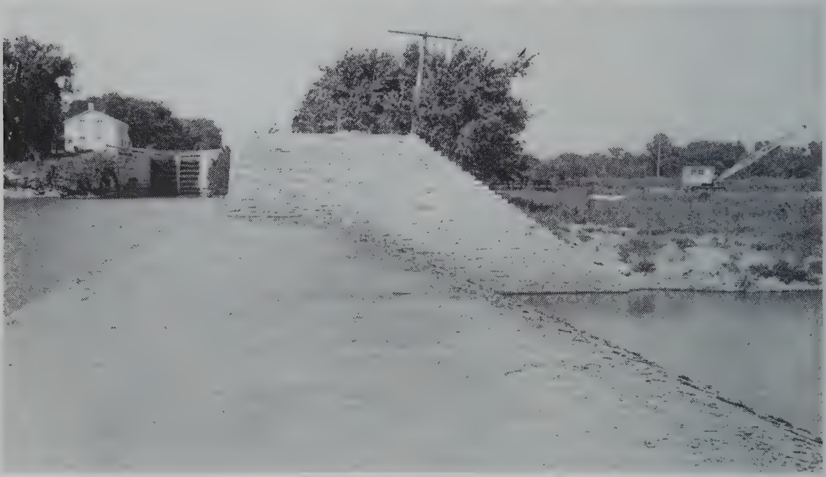

Figure No. 27. Diversion Dam—Channahon with Lock 6 in the background.

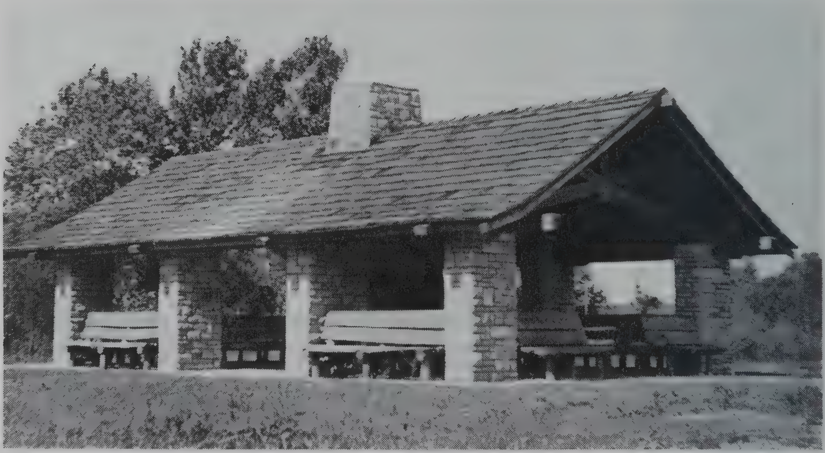

Figure No. 28. Picnic shelter at Channahon.

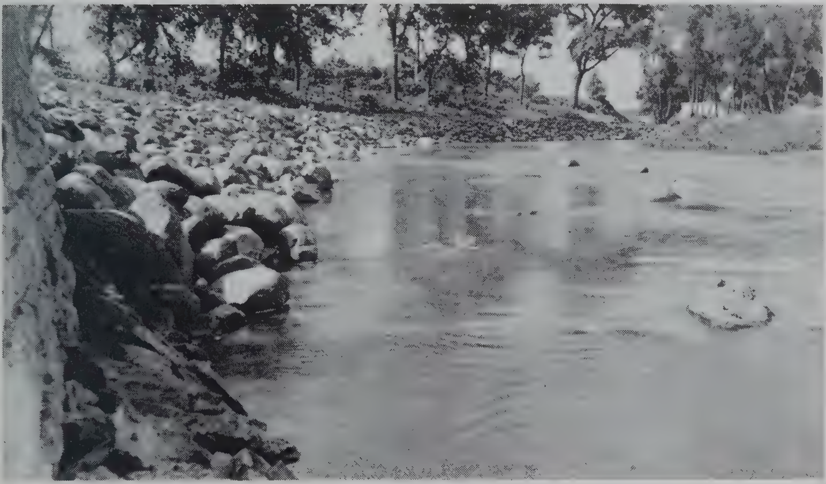

Figure No. 29. Riprapping river side of towpath.

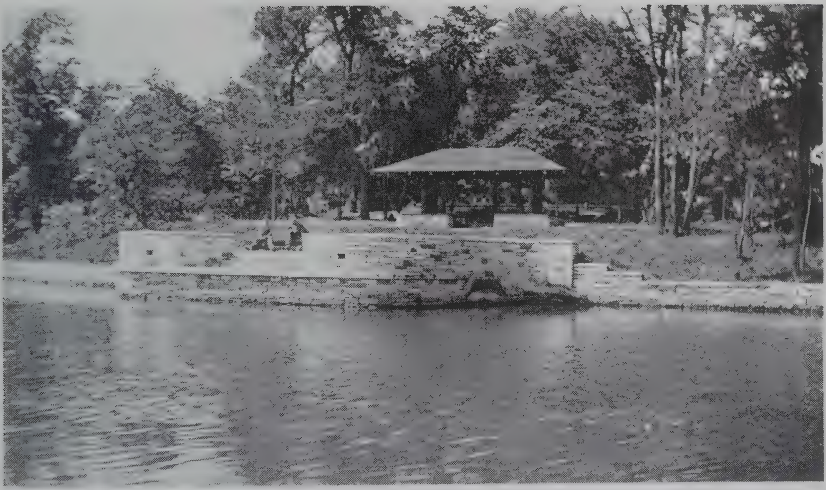

Figure No. 30. Shelter and boat landing McKinley Woods.

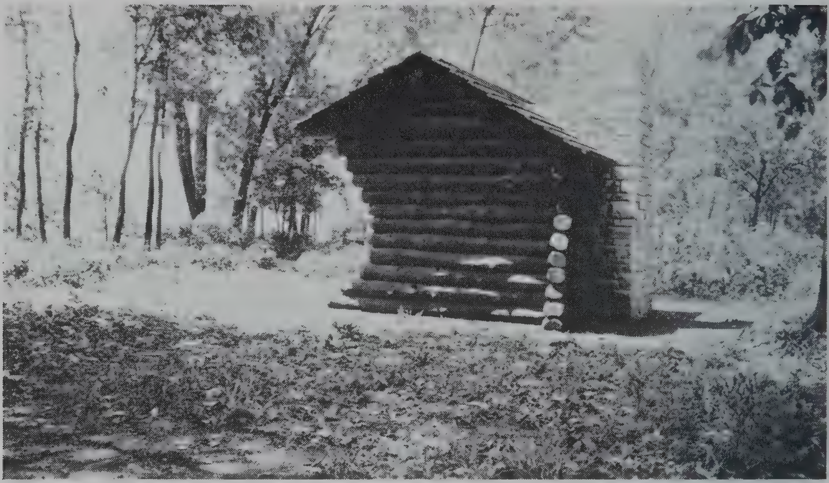

Figure No. 31. Picnic shelter Kankakee feeder.

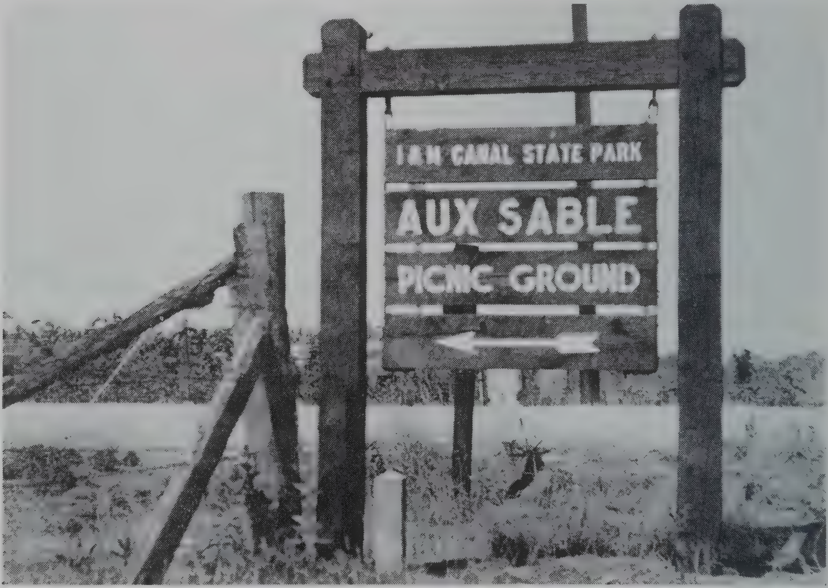

Figure No. 32. Entrance side to Aux Sable area on U. S. Route 6.

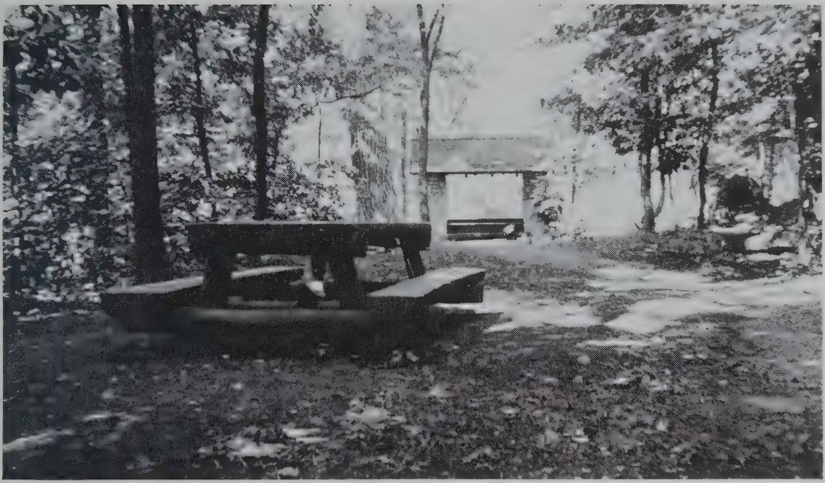

Figure No. 33. Picnic area—Aux Sable.

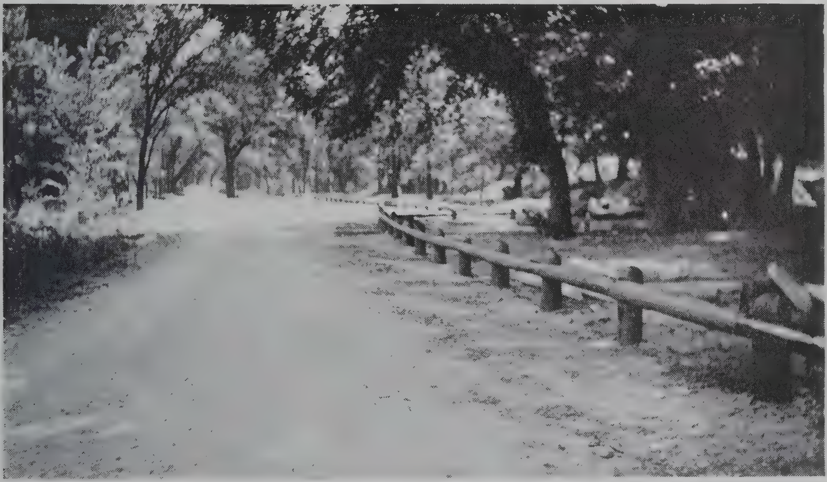

Figure No. 34. Parking area at Aux Sable.

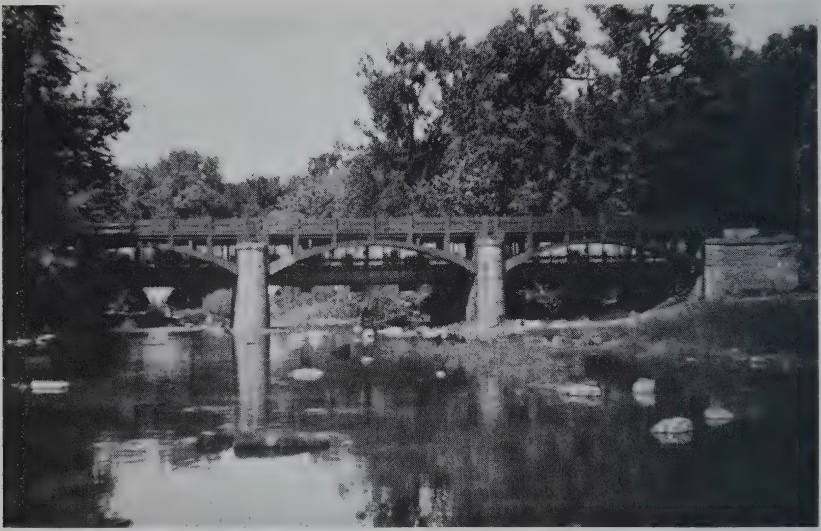

Figure No. 35. Foot bridge alongside Aux Sable aqueduct.

SUMMARY OF I. & M. CANAL FUND.

July 1, 1935 to June 30, 1936.

Balance on hand July 1, 1935	$57,956.98	
Correction as instructed by Chief Engineer Letter dated April 30, 1936.	256.40	$57,700.58
Expenditures	$27,503.07	
Receipts	17,173.12	
Expenditures over receipts	$10,329.95	$10,329.95
Balance on hand July 1, 1936		$47,370.63

DETAILED RECEIPTS.

Bill Board	$ 62.50
Bridge	2,188.14
Gas Main	287.00
Land	7,852.25
Land and House	114.00
Pole Line	1,178.30
R. R. Right of Way	271.42
Switch Track	800.00
Water Pipe	4,256.01
Well	50.00
Sale of unserviceable equipment	16.00
Miscellaneous	97.50
Total	$17,173.12

DETAILED EXPENDITURES.

Salaries and Wages	$22,505.60
Office Expenses	1,332.10
Travel Expenses	1,352.25
Operation	1,582.63
Repairs	228.89
Equipment	279.72
Permanent Improvements	221.88
Total	$27,503.07

I. & M. CANAL.

STATE OF ILLINOIS.

SUMMARY OF COLLECTIONS DEPOSITED—JULY 1, 1935, TO JUNE 30, 1936.

	Bill board.	Bridge.	Gas main.	Land.	Land and house.	Pole line.	Miscellaneous.	Water pipe.	Well.	Railroad right of way.	Switch track.	Unserviceable equipment.	Total.
1935.													
July	$ 5.00	$300.00		$505.00		$240.20	$ 5.30						$1,055.50
August	40.00	400.00		748.00		479.86	5.30	$ 620.00	$25.00				2,318.16
September	5.00		$110.00	490.00		22.65							627.65
October		413.14	1.00	398.75		77.53	21.30	2,045.00		$271.42			3,228.14
November		200.00	51.00	1,321.00		37.59					$400.00		2,009.59
December		100.00		293.50	$ 8.00	37.59	30.00				400.00		869.09
1936.													
January		200.00		1,257.50	8.00	66.26		945.00	25.00				2,501.76
February		350.00		261.00	8.00	37.59							656.59
March		25.00		349.50	18.00	37.59							430.09
April	12.50	200.00	25.00	421.00	18.00	41.32	5.30						723.12
May				1,188.50	18.00	62.53	25.00	569.35					1,838.38
June			100.00	618.50	36.00	37.59	5.30	101.66				$16.00	915.05
Total	$62.50	$2,188.14	$287.00	$7,852.25	$114.00	$1,178.30	$97.50	$4,256.01	$50.00	$271.42	$800.00	$16.00	$17,173.12

STATE OF ILLINOIS.

DEPARTMENT OF PUBLIC WORKS AND BUILDINGS.

DIVISION OF WATERWAYS.

SUMMARY OF ILLINOIS AND MICHIGAN CANAL LEASES.

Class of lease.	Total number of leases.	Total amount due annually.	Paid up leases.		Delinquent leases.		
			Number.	Amount.	Number.	Year rent.	Arrears.
Bill board	4	$ 62.50	4	$ 62.50			
Bridge	16	1,825.00	14	1,625.00	2	$ 200.00	$ 400.00
Gas mains	7	287.00	7	287.00			
Land leases	143	9,838.50	91	5,960.00	52	3,878.50	8,890.00
Land and house	6	592.00	3	316.00	3	276.00	23.00
Pole line	9	1,147.16	8	1,098.65	1	48.51	97.02
Switch track	2	800.00	2	800.00			
Water pipe	12	3,946.66	10	2,421.66	2	1,525.00	18,100.00
Well lease	2	35.00	2	35.00			
Miscellaneous	2	36.00	2	36.00			
Total	203	$18,569.82	143	$12,641.81	60	$5,928.01	$27,510.02

I. & M. CANAL.

SCHEDULE OF BILL BOARD LEASES ON AN ANNUAL BASIS.

PAID UP LEASES.

Date of execution.	Date of expiration.	Name.	Description—section, township, range.	Annual rental rate.	Date paid to.	Amount in arrears.	Remarks.
July 15, 1913	July 15, 1936	Illinois Posting Service	Sec. 11, Twp. 33, R. 3	$ 5.00	July 15, 1936	None	
Sept. 1, 1923	Sept. 1, 1936	Illinois Posting Service	Sec. 23, Twp. 33, R. 3	5.00	Sept. 1, 1936	None	
Apr. 15, 1924	Apr. 15, 1937	Illinois Posting Service	Sec. 11, Twp. 33, R. 3	12.50	Apr. 15, 1937	None	
Aug. 1, 1923	Aug. 1, 1936	Illinois Posting Service	Sec. 11, Twp. 33, R. 3	40.00	Aug. 1, 1936	None	
		Total		$62.50			

I. & M. CANAL.

SCHEDULE OF BRIDGE LEASES ON AN ANNUAL BASIS.

PAID UP LEASES.

Date of execution.	Date of expiration.	Name.	Description—section, township, range.	Annual rental rate.	Date paid to.	Amount in arrears.	Remarks.
Apr. 25, 1922	Apr. 25, 1937	A. T. & S. F. Ry. Co.	Sec. 3, Twp. 35, R. 10	$100.00	Apr. 25, 1937	None	
Jan. 29, 1910	Jan. 29, 1937	Chicago Junction R. R.	Sec. 36, Twp. 39, R. 13	100.00	Jan. 29, 1937	None	
Mar. 1, 1910	Mar. 1, 1937	Chicago Retort & Fire Brick Co.	Sec. 12, Twp. 33, R. 3	25.00	Mar. 1, 1937	None	
Feb. 15, 1925	Feb. 15, 1945	C. R. I. & P. R. R.	Secs. 3, 10, 9 and 4, Twp. 33, R. 7	350.00	Feb. 15, 1937	None	
Dec. 8, 1934	Dec. 8, 1944	C. R. I. & P. R. R.	Sec. 13, Twp. 33, R. 4	100.00	Dec. 8, 1936	None	
Oct. 15, 1933	Oct. 15, 1937	C. R. I. & P. R. R.	Sec. 10, Twp. 33, R. 3	100.00	Oct. 15, 1936	None	
May 1, 1920	May 1, 1937	C. R. I. & P. R. R.	Sec. 19, Twp. 35, R. 10	100.00	May 1, 1937	None	
Oct. 6, 1922	Oct. 6, 1942	Corn Prod. Refin. Co.	Sec. 23, Twp. 38, R. 12	150.00	Oct. 6, 1936	None	
July 25, 1922	July 23, 1936	Globe Oil & Refin.	Sec. 26, Twp. 37, R. 10	100.00	July 25, 1936	None	
July 1, 1908	July 1, 1936	Ill. Steel Co.	Sec. 34, Twp. 36, R. 10	100.00	July 1, 1936	None	
Oct. 1, 1934	Oct. 1, 1936	Nat'l Bisct. Co.	Sec. 13, Twp. 33, R. 4	100.00	Oct. 1, 1936	None	
July 30, 1918	July 30, 1936	North. Ill. Cereal	Sec. 23, Twp. 36, R. 10	100.00	July 30, 1936	None	
July 30, 1918	July 30, 1936	Texas Company	Sec. 14, Twp. 36, R. 10	100.00	July 30, 1936	None	
Nov. 10, 1933	June 30, 1937	Texas Company	Sec. 14, Twp. 36, R. 10	100.00	Nov. 10, 1936	None	
		Total		$1,625.00			

I. & M. CANAL.

SCHEDULE OF BRIDGE LEASES ON AN ANNUAL BASIS.

DELINQUENT.

Date of execution.	Date of expiration.	Name.	Description—section, township, range.	Annual rental rate.	Date paid to.	Amount in arrears.	Remarks.
Apr. 16, 1918	Apr. 16, 1937	Ill. Stone Co.	Sec. 21, Twp. 37, R. 11	$100.00	Apr. 16, 1934	$300.00	In hands of receivers.
May 2, 1935	May 2, 1945	Morris Coal & Mng.	Sec. 9, Twp. 33, R. 4	100.00	May 2, 1936	100.00	In hands of receivers.
		Total		$200.00		$400.00	

I. & M. CANAL.

SCHEDULE OF GAS MAIN LEASES ON AN ANNUAL BASIS.

PAID UP LEASES.

Date of execution.	Date of expiration.	Name.	Description—section, township, range.	Annual rental rate.	Date paid to.	Amount in arrears.	Remarks.
Sept. 20, 1934	Sept. 20, 1944	Pub. Serv. Co. of N. I.	Sec. 7-33-4 14-33-3	$100.00	Sept. 20, 1936	None	
Sept. 24, 1934	Sept. 24, 1944	Pub. Serv. Co. of N. I.	Sec. 23-33-5	10.00	Sept. 24, 1936	None	
Apr. 17, 1935	Apr. 17, 1945	Pub. Serv. Co. of N. I.	Sec. 18-33-5 3-33-4	25.00	Apr. 17, 1937	None	
June 1, 1931	June 1, 1951	Pub. Serv. Co. of N. I.	Sec. 7-33-4 11-33-3	100.00	June 1, 1937	None	
Oct. 8, 1904	Oct. 8, 1936	Pub. Serv. Co. of N. I.	Across hydraulic basin and canal lands, Ottawa, Ill.	50.00	Oct. 8, 1936	None	
Oct. 10, 1925	Oct. 10, 1936	Western United Gas & Electric Co.	Sec. 23-36-10	1.00	Oct. 10, 1936	None	
Sept. 24, 1924	Sept. 24, 1936	Western United Gas & Electric Co.	Sec. 26-36-10	1.00	Sept. 24, 1936	None	
		Total		$287.00			

I. & M. CANAL.

SCHEDULE OF LAND LEASES ON AN ANNUAL BASIS.

PAID UP LEASES.

Date of execution.	Date of expiration.	Name.	Description—section, township, range.	Annual rental rate.	Date paid to.	Amount in arrears.	Remarks.
Oct. 1, 1930	Oct. 1, 1936	Abugalis, A. and wife	Sec. 12, Twp. 38, R. 12	$ 15.00	Oct. 1, 1935	None	
Jan. 12, 1920	Jan. 12, 1937	Anderson, Mrs. Bertha	Sec. 9, Twp. 33, R. 2	10.00	Jan. 12, 1937	None	
Jan. 12, 1920	Jan. 12, 1937	Arthur, Wm. and wife	Sec. 9, Twp. 33, R. 2	10.00	Jan. 12, 1937	None	
Jan. 2, 1920	Jan. 2, 1937	Averill, M. and W.	Sec. 3, Twp. 33, R. 7	10.00	Jan. 2, 1937	None	
Jan. 2, 1935	Jan. 2, 1937	Averill, M. and W.	Sec. 3, Twp. 33, R. 7	15.00	Jan. 2, 1937	None	
Jan. 12, 1920	Jan. 12, 1937	Bain, K. G. and wife	Sec. 9, Twp. 33, R. 2	10.00	Jan. 12, 1937	None	
Aug. 12, 1919	Aug. 12, 1936	Barber, W. H.	Sec. 35, Twp. 39, R. 13	48.00	Aug. 12, 1936	None	
May 28, 1933	May 28, 1937	Baricobich, M. and wife	Sec. 13, Twp. 38, R. 12	30.00	May 28, 1937	None	
Jan. 5, 1905	Jan. 5, 1937	Barrows Lock Co.	Sec. 23, Twp. 36, R. 10	15.00	Jan. 5, 1937	None	
Jan. 24, 1922	Jan. 24, 1937	Bergan, Chas. and wife	Sec. 15, Twp. 37, R. 11	10.00	Jan. 24, 1937	None	
Apr. 24, 1931	Apr. 24, 1937	Bibly, Paul and wife	Sec. 13, Twp. 38, R. 12	15.00	Apr. 24, 1937	None	
Sept. 19, 1935	Sept. 19, 1936	Bowdre, Wayne and wife	Sec. 5, Twp. 34, R. 9	15.00	Sept. 19, 1936	None	
Jan. 12, 1920	Jan. 12, 1938	Bratney, A. C. and wife	Sec. 9, Twp. 33, R. 2	10.00	Jan. 12, 1938	None	

Sept. 10, 1935	Sept. 10, 1936	Button, Clare and wife	Sec. 3, Twp. 33, R. 7	15.00	Sept. 10, 1936	None	
Jan. 2, 1920	Jan. 2, 1937	Button, Floyd and wife	Sec. 3, Twp. 33, R. 7	10.00	Jan. 2, 1937	None	
Apr. 6, 1931	Apr. 6, 1937	Button, Geo. and wife	Sec. 3, Twp. 33, R. 7	15.00	Apr. 6, 1937	None	
Jan. 1, 1918	Jan. 1, 1937	C. B. & Q. R. R	Ottawa and LaSalle	750.00	Jan. 1, 1937	None	
Apr. 5, 1905	Apr. 5, 1937	C. R. I. & P. R. R	Sec. 10, Twp. 33, R. 7	25.00	Apr. 5, 1937	None	
Aug. 15, 1922	Aug. 15, 1936	Coleman Hdwe. Co	Sec. 9, Twp. 33, R. 7	25.00	Aug. 15, 1936	None	
Sept. 17, 1930	Sept. 17, 1936	Cook, C. D. et al	Sec. 25, Twp. 6, R. 5	15.00	Sept. 17, 1936	None	
Aug. 20, 1935	Aug. 20, 1936	Cowles, Chas. and wife	Sec. 20, Twp. 37, R. 11	15.00	Aug. 20, 1936	None	
Jan. 12, 1935	Jan. 12, 1937	Dalton, Chas	Sec. 9, Twp. 33, R. 2	15.00	Jan. 12, 1937	None	
July 1, 1935	July 1, 1936	Dudek, John	Sec. 35, Twp. 39, R. 13	15.00	July 1, 1936	None	
Feb. 10, 1935	Feb. 10, 1937	Dudek, Victoria	Sec. 35, Twp. 39, R. 13	30.00	Feb. 10, 1937	None	
July 1, 1935	July 1, 1936	Dudek, Victoria	Sec. 35, Twp. 39, R. 13	15.00	July 1, 1936	None	
Jan. 12, 1920	Jan. 12, 1937	Eastman, John	Sec. 9, Twp. 33, R. 2	10.00	Jan. 12, 1937	None	
Jan. 12, 1932	Jan. 12, 1937	Emburg, Chas. and wife	Sec. 9, Twp. 33, R. 2	15.00	Jan. 12, 1937	None	
Feb. 16, 1934	Feb. 16, 1937	Findley, John and wife	Sec. 35, Twp. 39, R. 13	30.00	Feb. 16, 1937	None	
Sept. 5, 1931	Sept. 5, 1936	Fisher, Frank and wife	Sec. 3, Twp. 33, R. 7	15.00	Sept. 5, 1936	None	
Jan. 2, 1920	Jan. 2, 1937	Garbutt, Wm. and wife	Sec. 3, Twp. 33, R. 7	10.00	Jan. 2, 1937	None	
July 1, 1922	July 1, 1936	Gedye, Calvin and wife	Sec. 15, Twp. 33, R. 1	10.00	July 1, 1936	None	
May 10, 1924	May 10, 1937	Gedye, Calvin and wife	Sec. 15, Twp. 33, R. 1	10.00	May 10, 1937	None	
June 25, 1934	June 25, 1937	Granados, Frank and wife	Sec. 10, Twp. 33, R. 3	15.00	June 25, 1937	None	
May 1, 1933	May 1, 1937	Grt. Lakes Dredge & Dk	Sec. 29, Twp. 39, R. 14	1,500.00	Nov. 1, 1936	None	
Apr. 1, 1920	Apr. 1, 1937	Hamre, Alfred and wife	Sec. 3, Twp. 33, R. 7	10.00	Apr. 1, 1937	None	
Sept. 10, 1926	Sept. 10, 1936	Hankins, Walt and wife	Sec. 14, Twp. 38, R. 12	15.00	Sept. 10, 1936	None	
May 4, 1908	May 4, 1937	Holderman, S. D	Secs. 9 and 10, Twp. 33, R. 6	5.00	May 4, 1937	None	
July 15, 1932	July 15, 1936	Hurt, Lawrence C. and wife	Sec. 13, Twp. 38, R. 12	22.00	July 15, 1936	None	
Apr. 1, 1932	Apr. 1, 1937	Ill. Power & Light	Sec. 15, Twp. 33, R. 1	150.00	Apr. 1, 1937	None	
May 1, 1932	Apr. 30, 1952	Ill. Power & Light	Sec. 11, Twp. 33, R. 3	750.00	June 30, 1936	None	Payable monthly.
Oct. 15, 1924	Oct. 15, 1936	Jensen, Hans and wife	Sec. 13, Twp. 38, R. 12	15.00	Oct. 15, 1936	None	
May 1, 1925	May 1, 1937	Jovanoich, T. and wife	Sec. 12, Twp. 38, R. 12	25.00	May 1, 1937	None	
Jan. 26, 1933	Jan. 26, 1937	Jurkovici, Geo. and wife	Sec. 12, Twp. 38, R. 12	15.00	Jan. 26, 1937	None	
July 1, 1935	July 1, 1936	Kelley, Irwin and wife	Sec. 3, Twp. 33, R. 7	10.00	July 1, 1936	None	
July 1, 1935	July 1, 1936	Kelley, J. and wife	Sec. 3, Twp. 33, R. 7	15.00	July 1, 1936	None	
Feb. 20, 1933	Feb. 20, 1937	Kindlespire, C. and wife	Sec. 10, Twp. 33, R. 7	15.00	Feb. 20, 1937	None	
Apr. 4, 1936	Apr. 4, 1937	Kindlespire, Geo. and wife	Sec. 10, Twp. 33, R. 7	15.00	Apr. 4, 1937	None	
Aug. 1, 1917	Aug. 1, 1936	Klebosky, Frank	Sec. 35, Twp. 39, R. 13	20.00	Aug. 1, 1936	None	
Mar. 1, 1931	Mar. 1, 1937	Koleff, John and wife	Sec. 13, Twp. 38, R. 12	15.00	Mar. 1, 1937	None	
Sept. 25, 1918	Sept. 25, 1936	Larson, Ole	Sec. 3, Twp. 33, R. 7	15.00	Sept. 25, 1936	None	
Jan. 12, 1927	Jan. 12, 1937	Manley, W. L	Sec. 9, Twp. 33, R. 2	15.00	Jan. 12, 1937	None	
Aug. 24, 1935	Aug. 24, 1936	Martinez, Leo	Sec. 20, Twp. 37, R. 11	10.00	Aug. 24, 1936	None	
May 18, 1922	May 18, 1937	McCowan, Roy	Sec. 17, Twp. 34, R. 9	15.00	May 18, 1937	None	
Dec. 3, 1934	Dec. 3, 1954	McVey, Wm. J	Sec. 9, Twp. 35, R. 10	10.00	Dec. 3, 1936	None	
Jan. 12, 1927	Jan. 12, 1937	Meador, James and wife	Sec. 9, Twp. 33, R. 2	15.00	Jan. 12, 1937	None	
July 14, 1930	July 14, 1936	Morris Lumber Co	Sec. 9, Twp. 33, R. 7	50.00	July 14, 1936	None	
Jan. 17, 1926	Jan. 17, 1937	Olson, Julia	Sec. 32, Twp. 38, R. 12	15.00	Jan. 17, 1937	None	
May 1, 1932	Apr. 30, 1952	Ottawa, City of	Sec. 11, Twp. 33, R. 3	750.00	June 30, 1936	None	Payable monthly.
Nov. 1, 1924	Nov. 1, 1936	Ottawa Silica Co	Sec. 9, Twp. 33, R. 3	10.00	Nov. 1, 1936	None	
July 8, 1920	July 8, 1936	Ottawa, Town of	Sec. 11, Twp. 33, R. 3	5.00	July 8, 1936	None	
Oct. 15, 1927	Oct. 15, 1936	Palmer, Dana M	Sec. 11, Twp. 33, R. 3	30.00	Oct. 15, 1936	None	
June 5, 1936	June 5, 1937	Pankow, Gust and wife	Sec. 12, Twp. 38, R. 12	15.00	June 5, 1937	None	

I. & M. CANAL.

SCHEDULE OF LAND LEASES ON AN ANNUAL BASIS.

PAID UP LEASES—Concluded.

Date of execution.	Date of expiration.	Name.	Description—section, township, range.	Annual rental rate.	Date paid to.	Amount in arrears.	Remarks
Mar. 15, 1933	Mar. 15, 1937	Peterson, M. O. and wife	Sec. 3, Twp. 33, R. 7	15.00	Mar. 15, 1937	None	
Jan. 20, 1920	Jan. 20, 1937	Polarek, Martin	Sec. 14, Twp. 37, R. 11	50.00	Jan. 20, 1937	None	
Oct. 15, 1922	Oct. 15, 1936	Rimmele, R. J	Sec. 15, Twp. 33, R. 1	10.00	Oct. 15, 1936	None	
July 1, 1928	July 1, 1936	Rimmele, R. W. and wife	Sec. 15, Twp. 33, R. 1	15.00	July 1, 1936	None	
Jan. 17, 1920	Jan. 17, 1937	Ring, Mrs. Anna	Sec. 32, Twp. 38, R. 12	25.00	Jan. 17, 1937	None	
Jan. 12, 1931	Jan. 12, 1937	Ristau, G. and wife	Sec. 9, Twp. 33, R. 2	15.00	Jan. 12, 1937	None	
July 16, 1932	July 16, 1936	Romac, Sam and wife	Sec. 13, Twp. 38, R. 12	15.00	July 16, 1936	None	
May 14, 1925	May 14, 1937	Rosenbach, Jake and wife	Sec. 12, Twp. 38, R. 12	15.00	May 14, 1937	None	
Jan. 12, 1920	Jan. 12, 1937	Russell, A. H. and wife	Sec. 9, Twp. 33, R. 2	10.00	Jan. 12, 1937	None	
June 2, 1923	June 2, 1943	Schermerhorn & Warren	Sec. 15, Twp. 33, R. 1	100.00	June 2, 1937	None	
Aug. 14, 1935	Aug. 14, 1936	Schumel, W. and wife	Sec. 20, Twp. 37, R. 1	15.00	Aug. 14, 1936	None	
Feb. 15, 1931	Feb. 15, 1937	Sharp, W. and wife	Sec. 3, Twp. 33, R. 7	15.00	Feb. 15, 1937	None	
Jan. 12, 1920	Jan. 12, 1937	Smith, R. and wife	Sec. 9, Twp. 32, R. 2	10.00	Jan. 12, 1937	None	
May 18, 1922	May 18, 1937	Spicer, W. H	Sec. 21, Twp. 33, R. 5	15.00	May 8, 1937	None	
Sept. 15, 1932	Sept. 15, 1936	Stagner, Art and wife	Sec. 12, Twp. 38, R. 12	15.00	Sept. 15, 1936	None	
Dec. 1, 1934	Dec. 1, 1936	Stein Hull Mfg. Co	Sec. 29, Twp. 39, R. 14	100.00	Dec. 1, 1936	None	
Sept. 25, 1918	Sept. 25, 1936	Still, Chas	Sec. 3, Twp. 33, R. 7	10.00	Sept. 25, 1936	None	
July 1, 1926	July 1, 1936	Tadych, E. and husband	Sec. 15, Twp. 33, R. 1	15.00	July 1, 1936	None	
Nov. 19, 1933	Nov. 19, 1938	Texas Company	Sec. 14, Twp. 36, R. 10	350.00	Nov. 19, 1936	None	
July 1, 1922	July 1, 1936	Timm, John	Sec. 15, Twp. 33, R. 1	10.00	July 1, 1936	None	
Jan. 10, 1920	Jan. 10, 1937	Tomich, M. and wife	Sec. 12, Twp. 38, R. 12	20.00	Jan. 10, 1937	None	
Aug. 1, 1923	Aug. 1, 1936	Tomlenovec, T. and wife	Sec. 12, Twp. 38, R. 12	10.00	Aug. 1, 1936	None	
July 1, 1912	July 1, 1936	Utica Elev. Co	Sec. 9, Twp. 33, R. 2	150.00	July 1, 1936	None	
June 15, 1931	June 15, 1937	Vasquez, Luis	Sec. 13, Twp. 38, R. 12	15.00	June 15, 1937	None	
Jan. 12, 1920	Jan. 12, 1937	Watts, C. and wife	Sec. 9, Twp. 32, R. 2	10.00	Jan. 12, 1937	None	
May 22, 1919	May 22, 1937	Western Quarries Co	Sec. 22, Twp. 37, R. 11	60.00	May 22, 1937	None	
July 17, 1931	July 17, 1936	Wolfe, Raymond and wife	Sec. 29, Twp. 34, R. 8	15.00	July 17, 1936	None	
July 10, 1919	July 10, 1936	Woock, Clarence	City of Lockport	15.00	July 10, 1936	None	
July 15, 1935	July 15, 1936	Zenchuk, Andrew	Sec. 4, Twp. 38, R. 13	15.00	July 15, 1936	None	
		Total		$5,960.00			

I. & M. CANAL.

SCHEDULE OF LAND LEASES ON AN ANNUAL BASIS.

DELINQUENT.

Date of execution.	Date of expiration.	Name.	Description—section, township, range.	Annual rental rate.	Date paid to.	Amount in arrears.	Remarks.
June 10, 1919	June 10, 1937	Arthur, Harry R.	Sec. 20, Twp. 34, R. 9	$ 5.00	June 10, 1936	$ 5.00	
May 1, 1929	May 1, 1937	Bennett, Mrs. Louise	Sec. 11, Twp. 33, R. 3	15.00	May 1, 1933	60.00	
Sept. 15, 1932	Sept. 15, 1936	Button, Earl	Sec. 3, Twp. 33, R. 7	15.00	Sept. 15, 1935	15.00	
Oct. 15, 1928	Oct. 15, 1936	Byers, Mrs. Anna	Sec. 11, Twp. 33, R. 3	15.00	Feb. 15, 1931	85.00	
May 1, 1926	May 1, 1937	Cavanaugh, Emmet and wife	Sec. 11, Twp. 33, R. 3	15.00	May 1, 1936	15.00	
July 10, 1923	July 10, 1936	Cesak, Roy and wife	Sec. 35, Twp. 39, R. 13	10.00	July 10, 1933	30.00	
Jan. 12, 1925	Jan. 2, 1937	Conover, Mary J	Sec. 9, Twp. 33, R. 2	10.00	Jan. 12, 1936	10.00	
Feb. 1, 1927	Feb. 1, 1937	Consumers Co.	Sec. 21, Twp. 37, R. 11	100.00	Feb. 1, 1933	400.00	
May 20, 1919	May 20, 1937	DePeaole, Agnes	Sec. 7, Twp. 38, R. 13	7.00	May 20, 1934	21.00	
Jan. 2, 1926	Jan. 12, 1937	Ford, Wm.	Sec. 9, Twp. 33, R. 2	10.00	Jan. 12, 1933	40.00	
Aug. 1, 1922	Aug. 1, 1936	Goode, Tom and wife	Sec. 29, Twp. 34, R. 8	10.00	Aug. 1, 1933	30.00	
Aug. 2, 1926	Aug. 2, 1946	Ill. Waterway Barge & Dock Company	Secs. 30 and 31, Twp. 39, R. 14; Sec. 36, Twp. 39, R. 13	2,000.00	Aug. 2, 1933	6,000.00	
May 23, 1923	May 23, 1937	Irrgang, Mrs. Bessie	Sec. 11, Twp. 33, R. 3	10.00	May 23, 1933	40.00	
May 16, 1921	May 16, 1937	James, Henry	Sec. 20, Twp. 34, R. 9	10.00	May 16, 1932	50.00	
Jan. 18, 1933	Sept. 9, 1935	Jefferies, James	Sec. 29, Twp. 34, R. 8	15.00	Jan. 18, 1934	30.00	Cancelled Sept 9, 1935.
Nov. 15, 1920	Nov. 15, 1936	Johnson, Andrew	Sec. 35, Twp. 39, R. 13	10.00	Nov. 15, 1931	50.00	
June 1, 1933	June 1, 1937	Knowles Foundry & Machine Company	Sec. 11, Twp. 33, R. 3	60.00	May 31, 1934	125.00	Payable monthly.
Sept. 2, 1924	Sept. 2, 1936	Knowlton, Mrs. Edna	Secs. 8 and 17, Twp. 34, R. 9	10.00	Sept. 2, 1933	30.00	
Nov. 24, 1919	Nov. 24, 1936	Manley, Thos.	Sec. 9, Twp. 33, R. 2	75.00	Jan. 11, 1932	365.00	
Apr. 19, 1930	Apr. 19, 1937	Matthiessen & Hegeler Zinc Co.	Secs. 15 and 22, Twp. 33, R. 1	150.00	Apr. 19, 1936	150.00	
June 1, 1919	June 1, 1937	McGinnis, Frank	Sec. 35, Twp. 39, R. 13	20.00	June 1, 1932	100.00	
Jan. 29, 1920	Jan. 29, 1937	Miller, August	Sec. 20, Twp. 37, R. 11	10.00	Oct. 29, 1936	2.50	
Oct. 1, 1928	Oct. 1, 1936	Miller, Neffie B	Sec. 11, Twp. 33. R. 3	10.00	Oct. 1, 1931	50.00	
Apr. 10, 1928	Apr. 10, 1937	Mitchell, W. and wife	Sec. 3, Twp. 33, R. 7	20.00	Jan. 10, 1937	5.00	
Oct. 15, 1927	Oct. 15, 1935	Momper, Peter	Sec. 29, Twp. 34, R. 8	15.00	Oct. 15, 1933	30.00	Lease cancelled Oct. 15, 1935.
Verbal lease.		Nat'l Fireproofing Co.	Land at Ottawa	852.00	June 30, 1930	52.68	Payable monthly.*
July 23, 1921	July 23, 1936	Olish, John and wife	Sec. 35, Twp. 39, R. 13	10.00	July 23, 1932	40.00	
Apr. 5, 1921	Apr. 5, 1937	Olish, Joe	Sec. 35, Twp. 39, R. 13	10.00	Apr. 5, 1932	50.00	
Jan. 29, 1920	Jan. 29, 1937	Piosecki, Kazmer	Sec. 20, Twp. 37, R. 11	9.00	Jan. 29, 1936	9.00	
Jan. 12, 1934	Jan. 12, 1937	Prentice, Harold and wife	Sec. 9, Twp. 33, R. 2	20.00	Jan. 12, 1936	20.00	
Apr. 23, 1932	Apr. 23, 1937	Przybyl, Mrs. Anna	Sec. 13, Twp. 28, R. 12	15.00	Apr. 23, 1935	30.00	
Mar. 8, 1919	Mar. 8, 1937	Rodomski, W	Sec. 23, Twp. 37, R. 10	8.00	Mar. 8, 1932	40.00	Sept. 9, 1935, cancelled.
Jan. 18, 1933	Sept. 9, 1935	Rick, Henry	Sec. 29, Twp. 34, R. 8	15.00	Jan. 18, 1934	30.00	

I. & M. CANAL.

SCHEDULE OF LAND LEASES ON AN ANNUAL BASIS.

DELINQUENT—Concluded.

Date of execution.	Date of expiration.	Name.	Description—section, township, range.	Annual rental rate.	Date paid to.	Amount in arrears.	Remarks.
July 1, 1928	July 1, 1936	Sorwinski, Frank	Sec. 15, Twp. 33, R. 1	$15.00	July 1, 1933	$ 45.00	
Feb. 7, 1933	Feb. 7, 1937	Scherer, Fred T	Sec. 11, Twp. 33, R. 3	37.50	Feb. 7, 1936	37.50	
July 1, 1922	July 1, 1936	Schurr, E. S	Sec. 15, Twp. 33, R. 1	10.00	July 1, 1935	10.00	
June 20, 1918	June 20, 1937	Schwager, Dan and wife	Sec. 35, Twp. 39, R. 13	20.00	June 20, 1932	100.00	
Oct. 1, 1927	Oct. 1, 1936	Schwager, John	Sec. 35, Twp. 39, R. 13	15.00	Oct. 1, 1931	75.00	
July 15, 1932	July 15, 1936	Simmons, Mrs. Wm	Sec. 13, Twp. 38, R. 12	15.00	July 15 1935	15.00	
Mar. 1, 1922	Mar. 1, 1937	Smith, John and wife	Sec. 3, Twp. 38, R. 13	30.00	Mar. 1, 1933	120.00	
Sept. 2, 1924	Sept. 2, 1936	Stacha, Julius	Sec. 15, Twp. 33, R. 1	10.00	Sept. 2, 1935	10.00	
Feb. 15, 1923	Feb. 15, 1937	Stedman, Geo., and Steve Wagner	Sec. 33, Twp. 35, R. 9	25.00	Feb. 15, 1933	100.00	
Sept. 15, 1932	Sept. 15, 1936	Strader, Ray C. and wife	Sec. 13, Twp. 38, R. 12	15.00	Jan. 15, 1934	40.00	
July 1, 1915	July 1, 1936	Strong, Mrs. Mary	Sec. 9, Twp. 33, R. 7	5.00	July 1, 1935	5.00	
July 15, 1932	July 15, 1936	Tomich, Philip and wife	Sec. 12, Twp. 38, R. 12	15.00	July 15, 1935	15.00	
Jan. 12, 1920	Jan. 12, 1937	Veal, Wm. and wife	Sec. 9, Twp. 33, R. 2	10.00	Jan. 12, 1936	10.00	
Jan. 18, 1933	Jan. 18, 1937	Walkers, J. H	Sec. 29, Twp. 34, R. 8	30.00	Jan. 18, 1934	90.00	
Oct. 1, 1922	Oct. 1, 1936	Warnock, W. and wife	Sec. 35, Twp. 39, R. 13	30.00	Oct. 1, 1932	120.00	
July 15, 1925	July 15, 1936	Wiegand, John and wife	Sec. 20, Twp. 37, R. 11	15.00	July 15, 1936	†45.00	
Jan. 29, 1920	Jan. 29, 1937	Wiegand, Rose	Sec. 20, Twp. 37, R. 11	10.00	Jan. 29, 1934	30.00	
Mar. 8, 1919	Mar. 8, 1937	Wietscykoski, Michael	Sec. 25, Twp. 37, R. 11	10.00	Mar. 8, 1931	60.00	
May 3, 1919	May 3, 1937	Zygman, John	Sec. 20, Twp. 37, R. 11	10.00	May 3, 1931	60.00	
		Total		$3,878.50		$8,890.00	

Previous years delinquent.
* $52.60 due on rent from Jan. 1, 1935 date company went in receivership Jan. 23, 1935.
† Rent for current year paid by I. E. R. C.

I. & M. CANAL.

SCHEDULE OF LAND AND HOUSE LEASES ON AN ANNUAL BASIS.

PAID UP LEASES.

Date of execution.	Date of expiration.	Name.	Description—section, township, range.	Annual rental rate.	Date paid to.	Amount in arrears.	Remarks.
July 27, 1922	July 27, 1936	A. T. & S. F. R. R.	Sec. 36, Twp. 39, R. 13	$100.00	July 27, 1936		Payable monthly.
Mar. 1, 1936	Mar. 1, 1937	Cody, Andrew J.	Lot 10, Block 5, Joliet, Ill.	120.00	June 30, 1936		
June 1, 1933	June 1, 1937	Dickinson, Thomas	Lot 2, Block 116, Lockport, Ill.	96.00	June 30, 1936*		
		Total		$316.00			

* House vacant from March 20, 1935 until Dec. 1, 1935 while being repaired by I. E. R. C.

I. & M. CANAL.

SCHEDULE OF LAND AND HOUSE LEASES ON AN ANNUAL BASIS.

DELINQUENT.

Date of execution.	Date of expiration.	Name.	Description—section, township, range.	Annual rental rate.	Date paid to.	Amount in arrears.	Remarks.
June 2, 1936	June 3, 1937	Fleming, Shirely	Sec. 14, Twp. 33, R. 2	$ 60.00		$ 5.00	Payable monthly.
May 25, 1936	May 25, 1937	McKenzie, Chas. E.	Sec. 13, Twp. 33, R. 1	96.00	June 25, 1936	8.00	Payable monthly.
May 20, 1936	May 20, 1936	Murphy, Patrick and wife	Sec. 29, Twp. 39, R. 14	120.00	June 20, 1936	10.00	Payable monthly.

I. & M. CANAL.

SCHEDULE OF POLE LINE LEASES ON AN ANNUAL BASIS.

PAID UP LEASES.

Date of execution.	Date of expiration.	Name.	Description—section, township, range.	Annual rental rate.	Date paid to.	Amount in arrears.	Remarks.
Oct. 10, 1925	Oct. 10, 1936	A. T. & T. Co.	Sec. 31, Twp. 34, R. 4 and Sec. 6, Twp. 33, R. 4	$ 10.00	Oct. 10, 1936		
July 1, 1933	June 30, 1938	Ill. Bell Tel. Co.	Between city of LaSalle and east line of LaSalle County	151.80	June 30, 1936		Payable monthly.
July 1, 1933	June 30, 1938	Ill. Bell Tel. Co.	Between Ashland Ave., Chicago and west line of Grundy County	299.28	June 30, 1936		
Sept. 14, 1932	Sept. 14, 1952	Ill. Power & Light Co.	Sec. 11, Twp. 33, R. 3	10.00	Sept. 14, 1936		
July 9, 1927	July 9, 1947	Ill. Power & Light Co.	Peru to Joliet	176.67	July 9, 1936		
Feb. 12, 1935	Feb. 12, 1945	Ill. Power & Light Co.	Secs. 11 and 12, Twp. 33, R. 3; Sec. 7, Twp. 33, R. 4	28.67	Feb. 12, 1937		
July 17, 1916	July 17, 1936	Pub. Service of Northern Illinois	Jackson St., Ashland Ave., Chicago	417.33	July 17, 1936		
Oct. 10, 1925	Oct. 10, 1936	Western Union Tel. Company	Sec. 35, Twp. 39, R. 13	5.00	Oct. 10, 1936		
		Total		$1,098.65			

I. & M. CANAL.

SCHEDULE OF POLE LINE LEASES ON AN ANNUAL BASIS.

DELINQUENT.

Date of execution.	Date of expiration.	Name.	Description—section, township, range.	Annual rental rate.	Date paid to.	Amount in arrears.	Remarks.
May 1, 1927	May 1, 1937	Marseilles Tel. Co.	Secs. 13, 18 and 15, Twps. 33, 33 and 33, R. 4, 5 and 4	$48.51	May 1, 1935	$97.02	

I. & M. CANAL.

SCHEDULE OF SWITCH TRACK LEASES ON AN ANNUAL BASIS.

PAID UP LEASES.

Date of execution.	Date of expiration.	Name.	Description—section, township, range.	Annual rental rate.	Date paid to.	Amount in arrears.	Remarks.
Dec. 5, 1929	Dec. 5, 1939	C. B. & Q. R. R.	Secs. 10 and 11, Twp. 33, R. 3	$400.00	Dec. 5, 1936	None	
Dec. 5, 1929	Dec. 5, 1939	C. R. I. & P. R. R.	Secs. 10 and 11, Twp. 33, R. 3	400.00	Dec. 5, 1936	None	
		Total		$800.00			

I. & M. CANAL.

SCHEDULE OF TERMINAL LEASES ON AN ANNUAL BASIS.

NONE.

I. & M. CANAL.

SCHEDULE OF WELL LEASES ON AN ANNUAL BASIS.

PAID UP LEASES.

Date of execution.	Date of expiration.	Name.	Description—section, township, range.	Annual rental rate.	Date paid to.	Amount in arrears.	Remarks.
Mar. 18, 1924	Mar. 18, 1944	Joliet, city of	Sec. 16, Twp. 35, R. 10	$10.00	Mar. 18, 1937		
Jan. 1, 1911	Jan. 11, 1937	LaSalle, city of	Sec. 14, Twp. 33, R. 1	25.00	Jan. 11, 1937		
		Total		$35.00			

I. & M. CANAL.

SCHEDULE OF WATER PIPE LEASES ON AN ANNUAL BASIS.

PAID UP LEASES.

Date of execution.	Date of expiration.	Name.	Description—section, township, range.	Annual rental rate.	Date paid to.	Amount in arrears.	Remarks.
July 1, 1935	July 1, 1940	American Steel & Wire Co.	Rockdale Mill, Joliet, Ill.	$500.00	July 1, 1936		
Oct. 1, 1903	Oct. 1, 1936	Chicago Retort & Fire Brick Company	Sec. 12, Twp. 33, R. 3	80.00	Oct. 1, 1936		
July 25, 1922	July 25, 1936	Globe Oil & Refining Co.	Secs. 25, 26 and 35, Twp. 37, R. 10	150.00	July 25, 1936		
May 14, 1923	May 14, 1943	Commonwealth Edison Co.	Sec. 35, Twp. 39, R. 13	25.00	May 14, 1937		
June 20, 1936	Oct. 1, 1936	Effner, John	Sec. 33, Twp. 35, R. 9	10.00	Oct. 1, 1936		
July 1, 1935	July 1, 1940	Ill. Power & Light Corp.	LaSalle, Ill.	91.66	July 1, 1936		
Aug. 1, 1917	Aug. 1, 1936	King & Hamilton	Ottawa, Ill.	40.00	Aug. 1, 1936		
Jan. 1, 1918	Jan. 1, 1937	Morris Paper Mills	Sec. 3, Twp. 33, R. 7	945.00	Jan. 1, 1937		
Aug. 1, 1917	Aug. 1, 1936	Ottawa Silica Company	Sec. 10, Twp. 33, R. 3	555.00	Aug. 1, 1936		
Verbal lease.		LaSalle	City of LaSalle, Ill.	25.00	Jan. 1, 1937		
		Total		$2,421.66			

I. & M. CANAL.

SCHEDULE OF WATER PIPE LEASES ON AN ANNUAL BASIS.

DELINQUENT.

Date of execution.	Date of expiration.	Name.	Description—section, township, range.	Annual rental rate.	Date paid to.	Amount in arrears.	Remarks.
Sept. 18, 1918	Sept. 18, 1936	Adler, J. C. & Co.	Bl. 18, W. Joliet	$ 25.00	Sept. 28, 1932	$ 100.00	
May 24, 1922	May 24, 1942	Briet, Fred D.	Sec. 29, Twp. 34, R. 4	1,500.00	May 24, 1925	18,000.00	
		Total		$1,525.00		$18,100.00	

I. & M. CANAL.

SCHEDULE OF MISCELLANEOUS LEASES ON AN ANNUAL BASIS.

Date of execution.	Date of expiration.	Name.	Description—section, township, range.	Annual rental rate.	Date paid to.	Amount in arrears.	Remarks.
Verbal lease.		A. T. & S. F. R. R.	Near Lemont	$16.00	Oct. 16, 1935		10c per cu. yd.
Verbal lease.		Bell, Wm	Sec. 3, Twp. 33, R. 7	30.00	Sept. 10, 1935		Cancelled Sept. 10, 1935.

BUREAU OF AUDITS AND ACCOUNTS.

G. W. FLATTERY, *Chief.*

The bookkeeping system of the Division of Waterways was completely revised and installed at the beginning of the Fifty-Ninth Biennium July 1, 1935. This system gives a better control of appropriations and consists of the following records:

Voucher Register

This register shows the distribution of costs which is supplied by the Bureau Chiefs and which is useful in the administration of appropriations. It also shows standard account distribution which is required by the Department of Finance.

Contract Costs and Budget Ledger

This record is made in such a manner that the outstanding liability on contracts is shown at all times and permits a complete control of contract work as payments cannot be made without proper authorization such as fully executed contracts and authorizations for additions, deductions and extra work.

Revenue and Collection Register

Collections are recorded each day and classified according to their source and summarized each month. This register must agree with monthly reports made to the Department of Finance and quarterly report made to the Auditor of Public Accounts.

Requisition and Purchase Order Record

Requisitions for each appropriation are numbered and filed separately and record is maintained to show the unexpended balance on each requisition at all times.

Invoice Record

Invoices and bills are recorded as soon as they reach the office and the record shows the handling they receive and the voucher number when finally vouchered. All bills and invoices must bear the approval of the Bureau Chief under whose jurisdiction expense was incurred before they are passed for payment.

Personal Expense Record.

All expenses incurred by employees are recorded on this record as statements are received by this office. Voucher numbers are shown when statements are finally vouchered. All statements must bear the approval of the Bureau Chief under whose jurisdiction the expense was incurred before being passed for payment.

Salary Payment Record

A separate record is maintained for each employee which shows the amount paid for services each month, and which also shows the voucher number by which payment was made.

Equipment Record

A card record is maintained of each piece of equipment in the possession of the Division of Waterways. As new equipment is purchased cards are added. When equipment is retired cards are removed from the active file. This record is used principally for inventory purposes.

Financial Report

A monthly report is made to the Director of the Department and to the Chief Engineer of the Division showing the balance in funds or appropriations at the close of each month. Revenues, liabilities and reserves are estimated for the following month. This report also shows the estimated surplus which is available for use during the balance of the year. Financial report for the month ending June 30, 1936 is shown immediately following this report.

I. & M. Canal Fund

Records of the I. & M. Canal are similar to those of the General Waterway appropriations. In addition record is maintained of the amount due from each lessee of I. & M. Canal property and a record which shows the date of execution and expiration of each lease which is used for rendering invoices when accounts are due.

STATE OF ILLINOIS.

DEPARTMENT OF PUBLIC WORKS AND BUILDINGS.

DIVISION OF WATERWAYS.

STATUS OF FINANCES TO JUNE 30, 1936.

REVENUES—ESTIMATED TO JUNE 30, 1936.

Account.	General revenue funds.										Water-way Fund.	I. & M. Canal Fund.
	Total, all funds.	Office expense.	Travel expense.	Repairs and equip-ment.	Engineer-ing services.	Surveys and investi-gations.	Mainte-nance of navi-gation, Illinois rivers.	Preven-tion of obstruc-tions.	Flood relief, Illinois rivers.	Flood relief and rivers and lakes control.		
Balance in funds or appropriation May 31, 1936	$516,625 46	$1,939.42	$2,077.15	$117.63	$1,800.00	$2,787.96	$58,297.20	$5,299.60	*$10,653.83	$431,009.95	*$20.00	$2,622.72
Revenues anticipated—June 1 to 30, 1936—												
Collections estimated for June, 1936	$ 600.00										$ 600.00	
Accounts receivable	34,851.44								¶1,603.00		†33,248.44	
Total anticipated revenues to June 30, 1936	$35,451.44								$1,603.00		$33,848.44	
Total revenues available to June 30, 1936	$552,076.90	$1,939.42	$2,077.15	$117.63	$1,800.00	$2,787.96	$58,297.20	$5,299.60	$12,256.83	$431,009.95	$33,868.44	$2,622.72

LIABILITIES AND RESERVES ESTIMATED AS OF JUNE 30, 1936.

Account.	Total, all funds.	Office expense.	Travel expense.	Repairs and equip-ment.	Engineer-ing services.	Surveys and investi-gations.	Mainte-nance of navi-gation, Illinois rivers.	Preven-tion of obstruc-tions.	Flood relief, Illinois rivers.	Flood relief and rivers and lakes control.	Water-way Fund.	I. & M. Canal Fund.
Construction liabilities—June 1, 1936—												
Contract in force and uncompleted—R No. 2	$ 600.80									$ 600.80		
Contract in force and uncompleted—FR No. 3	10,746.00									10,746.00		
Contract in force and uncompleted—M No. 3	668.00						$668.00					
Total construction liabilities	$12,014.80						$668.00			$11,346.80		

Reserve for operation to June 30, 1936—												
Salaries and wages	$16,575.00				$1,450.00	$925.00	$7,200.00	$700.00		$4,600.00		$1,700.00
Office expense	900.00	$300.00					300.00			200.00		100.00
Travel expense	3,900.00		$400.00			500.00	400.00	600.00		1,800.00		200.00
Operation	750.00						700.00					50.00
Repair and equipment	450.00			$75.00		25.00	300.00					50.00
Dressing cables on LaSalle, Florence and Hardin bridges	560.00						560.00					
For cost of moving and building bins in new office at Joliet	480.00						480.00					
Service and storage of boat at McHenry, Ill.	175.00									175.00		
Repair water pipes at Jackson and Jefferson Street bridges	486.00						486.00					
Repairs to Havana bridge	200.00						200.00					
Total reserve for operation	$24,476.00	$300.00	$400.00	$75.00	$1.450.00	$1,450.00	$10 626.00	$1.300.00		$6.775.00		$2,100.00
Reserve for construction to June 30, 1936—												
Dock wall at Starved Rock	$ 6,500.00						$6,500.00					
Levee in Pekin-LaMarsh drainage and levee district	24,000.00									$24.000.00		
Total reserve for construction to June 30, 1936	$30,500.00						$6,500.00			$24,000.00		
Total liabilities and reserves estimated to June 30, 1936	$66,990.80	$300.00	$400.00	$75.00	$1,450.00	$1,450.00	$17,794.00	$1,300.00		$42,121.80		$2,100.00
Surplus estimated to June 30, 1936	$485,086.10	$1,639.42	$1,677.15	$42.63	$350.00	$1,337.96	$40,503.20	$3,999.60	$12,256.83	$388,888.15	$33,868.44	$522.72
Total liabilities, reserves and surplus—June 30, 1936	$552,076.90	$1,939.42	$2,077.15	$117.63	$1,800.00	$2,787.96	$58,297.20	$5,299.60	$12,256.83	$431,009.95	$33,868.44	$2.622.72

NOTE.—The balances shown in funds represent the amounts remaining for the first year of the 59th G. A. appropriation with the exception of flood relief and rivers and lakes control, flood relief Illinois rivers and waterway fund which are lump sum appropriations and not budgeted by years.

* The balances shown at the top of this statement marked with asterisk indicate balances in funds, rather than balances in appropriation.

† We have shown an account receivable item due from the Congress Construction Company on the balance sheet of the waterway fund. This item may be difficult to realize upon.

¶ The amount of $1,603.00 shown under flood relief Illinois rivers appropriation as account receivable represents the amount which are collectible from the Federal government and is exclusive of approximately $12,000 to be refunded on the Mauvaisterre and village of Naples districts when the work is completed and a final audit made to determine the exact amount to be refunded.

Tabulation showing the appropriations for the biennium July 1, 1935 to June 30, 1937 for the various funds of the Division of Waterways; the amounts expended during the first year and the unexpended balance on June 30, 1936.

Source of Revenues for the Various Appropriations.

- General Revenue.
  - Waterway General.
  - Flood Relief and Rivers and Lakes Control.
- Flood Relief Illinois River Valley S. B. 566 was appropriated contingent on refunds from the Federal Government of unexpended balances of various flood relief projects.
- Waterway Construction Fund—Part of the $20,000,000.00 bond issue for the deep waterway.
- Illinois and Michigan Canal Funds are derived from the rentals of Illinois and Michigan Canal lands.

Statement of collections deposited to the credit of the various funds for the first year of the biennium is also shown.

FINANCIAL REPORT—DIVISION OF WATERWAYS.

	Appropriation July 1, 1935 to June 30, 1937.	Expended July 1, 1935 to June 30, 1936.	Unexpended balance June 30, 1936.
Waterways General—			
Office Expense	$ 10,000.00	$ 3,340.47	$ 6,659.53
Travel Expense	10,000.00	3,229.08	6,770.92
Repairs & Equipment	500.00	156.67	343.33
Engineering Service & Expenses	35,000.00	17,150.00	17,850.00
Surveys & Investigations	30,000.00	13,263.26	16,736.74
Prevention of Obstructions	32,000.00	11,812.24	20,187.76
Maintenance of Navigation & Structures—Illinois Rivers	275,000.00	100,918.66	174,081.34
Flood Relief—			
Flood Relief & Rivers & Lakes Control	500,000.00	76,619.27	423,380.73
Flood Relief Illinois River Valley, S. B. 566	46,256.83	34,000.00	12,256.83
Waterway Construction Fund	75,000.00	2,111.78	72,888.22
Illinois & Michigan Canal Fund	50,000.00	27,503.07	22,496.93
Total	$1,063,756.83	$290,104.50	$773,652.33

Collections	July 1, 1935 to June 30, 1936
Illinois and Michigan Canal Fund	$17,173.12
Flood Relief Refund from Federal Government	24,516.28
General Revenue Fund	404.75
Waterway Fund	40.25
Water Terminal Fund	180.00
	$42,314.40

UNIVERSITY OF ILLINOIS-URBANA
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